

western industry



OCTOBER

1959



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Volume 24

No. 10

western
industry



SERVES THE THIRTEEN WESTERN STATES

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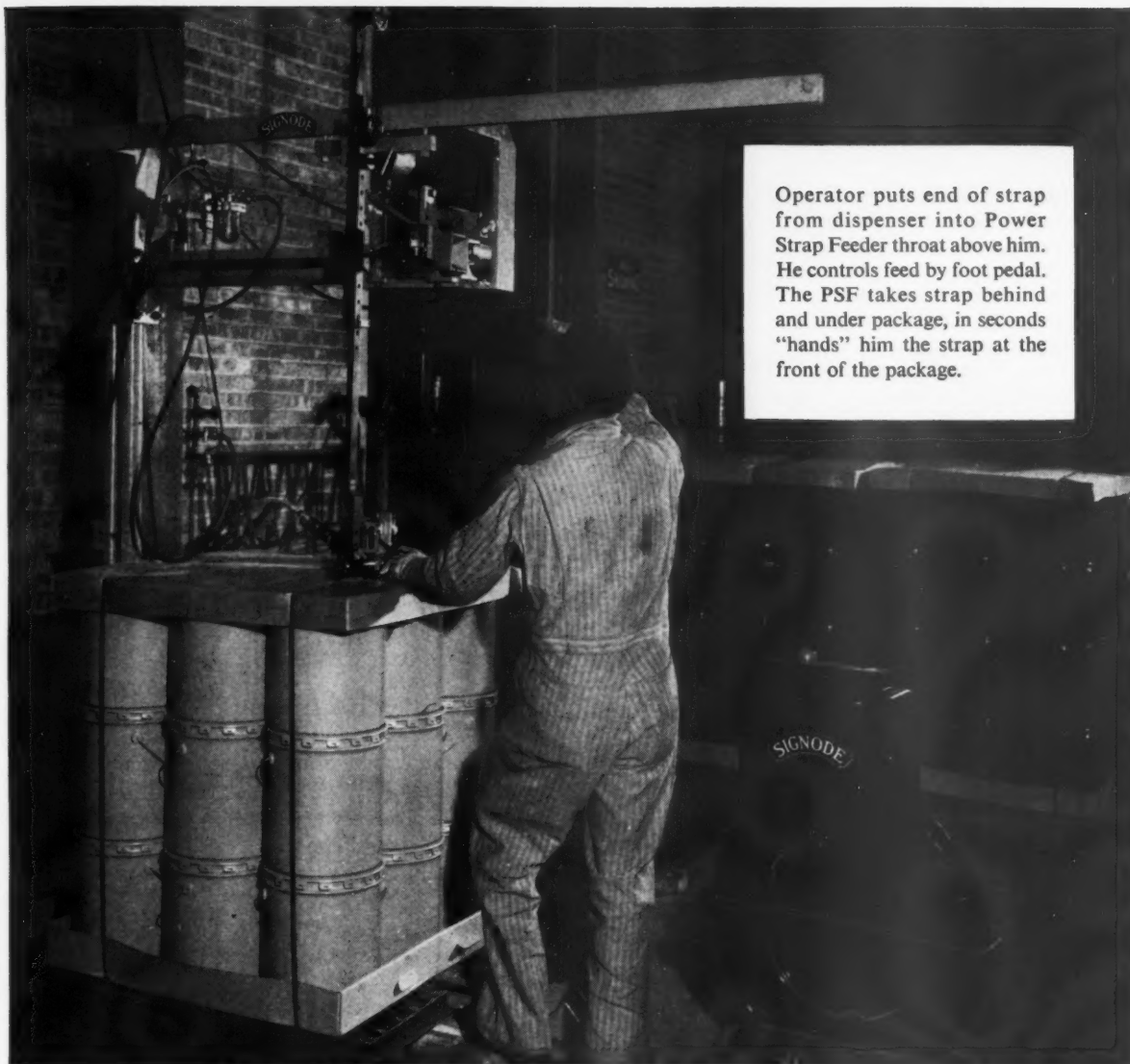
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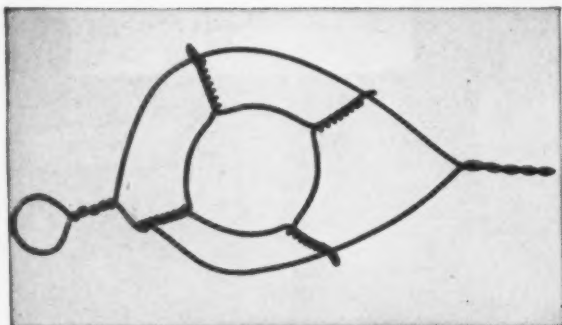
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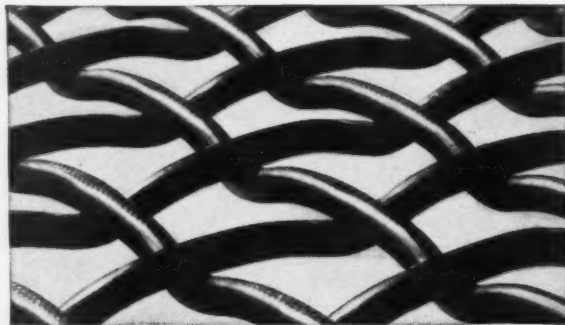
Wire Experts Quiz

For each of these prominent Western manufacturers, skilled USS metallurgists recommended the one right USS wire for the job.

Can you name the finished product?



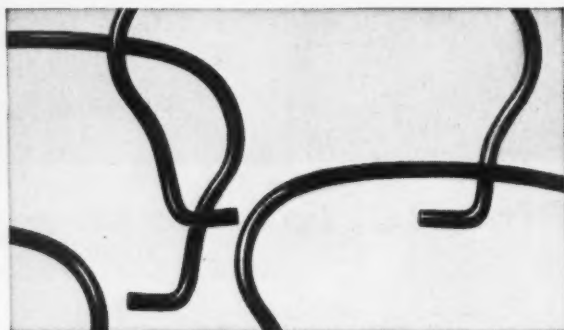
1. I. F. Schnier Company, San Francisco, California, wanted a fine wire that would be able to take extreme twisting and bending without breaking. The right wire recommended by USS for this specialized job was 19 gauge Galvanized Soft Basic Industrial Quality C-1006 from Fine Wire Quality Rods. The product: Wire hoods for champagne bottles.



2. Star Wire Screen & Iron Works, Inc., Los Angeles, California, asked for a wire to withstand deep crimping in manufacturing and heavy abrasion in their customer's application. A USS metallurgist solved the problem promptly with USS Premier Spring Wire for Gravel Screen. The product: Screens for sand, gravel and mining operations.



3. Campbell Chain Co., Alvarado, California, required a clean soft wire to produce a sound weld on automatic high-speed, welded link chain machines. USS met each of these rigid requirements exactly with C-1020 Lime Bright Annealed Chain Quality Wire. The product: High test chain.



4. Melco Wire Products Co., Glendale, California, needed a medium tensile wire with good fourslide forming quality and a tight galvanized coat. The ideal answer was C-1020 Galvanized Hard Basic Industrial Quality Wire, designed for hi-speed forming. The product: Glass jar handles.

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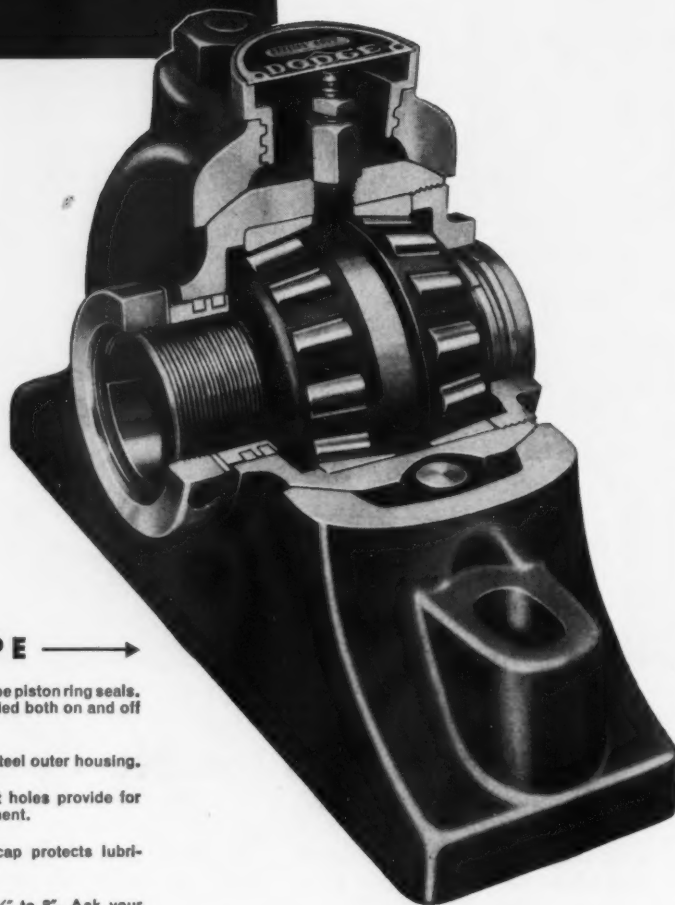
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WESTERN INDUSTRY/OCTOBER 1959

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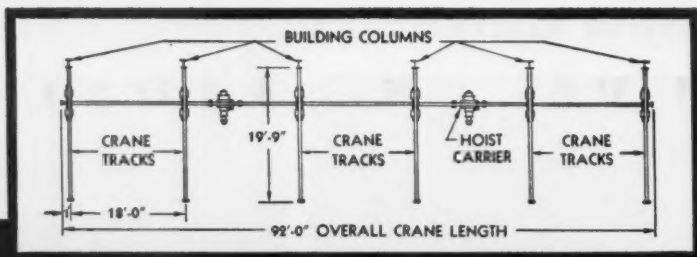
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This Cleveland Tramrail installation permits unobstructed operation of other conveyances above and below the Tramrail tracks.



CLEVELAND TRAMRAIL 92'-0" CRANE OPERATES ON SIX JIB TRACKS

An unusual Cleveland Tramrail crane installation serves the punching and spacing table in the structural shop of Omaha Steel Works, Omaha, Nebraska.

A 92-foot long crane extends the length of the table and operates on six jib tracks secured to the building columns. The tracks are supported near the middle and the end by tie rods.

The crane is power-driven and has two hand-propelled carriers with three-ton electric hoists. Conductors are SAFPOWRBAR® which assure maximum safety and reliability.

The Tramrail installation permits a heavy overhead crane to travel above and is devoid of special track support columns which would restrict move-

ment of materials. The hoist carriers can be traveled quickly to any point on the crane and handle beams on the floor or machine. Beams of any length are easily maneuvered with the two hoists.

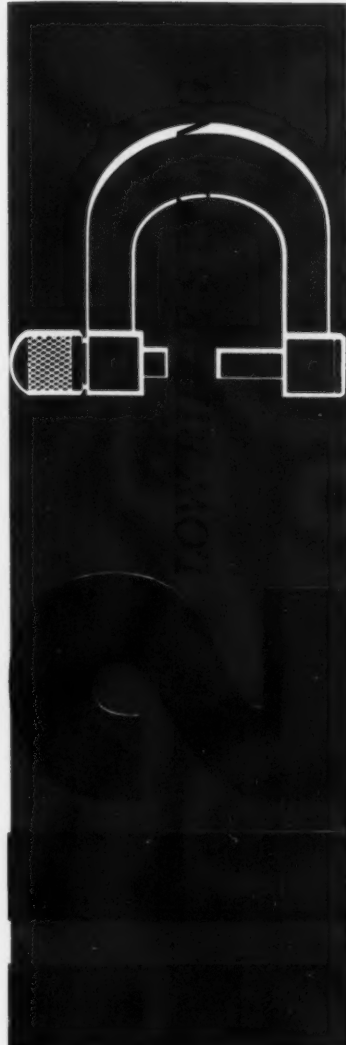
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WESTERN INDUSTRY/OCTOBER 1959



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western
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western meetings

First No. Calif. fork truck rodeo

THE FIRST NORTHERN CALIFORNIA fork truck rodeo will be held on Saturday, February 6, 1960 at the Oakland Naval Supply Center.

The rodeo, sponsored by the Northern California Chapter, American Material Handling Society, will demonstrate the value of better use and handling of the fork lift truck. This workhorse of material handling affords increased profits for users when operators sharpen their skill through training in safe operation and maintenance.

Both gas and electric powered equipment will be used by contestants. Sponsoring companies will select their best operators between now and mid-January. In the meantime standard training and maintenance checks will be developed in each company, assuring that all entrants are "up-to-standard". Operators entering the rodeo lists will compete with the best selected from other companies. Both men and women are eligible. Participants shall have had no accidents in the six months prior to the contest. Fork lift instructors are not allowed to participate. Companies will pay a nominal fee for each contestant—which will help defray the costs of conducting the rodeo.

Prizes will be awarded winners in each heat, as well as the finalists. No monetary awards will be made. Companies entering winners will receive plaques recognizing

MATERIAL HANDLING CONFERENCE—Leo Delventhal (third from left), president of the No. Calif. chapter of the American Material Handling Society (AMHS), was the guest speaker at a Materials Handling and Storage Methods Advisory Committee meeting at the Naval Supply Center in Oakland. Mr. Delventhal, who is a senior transportation engineer with Western Pacific Railroad Co., is explaining to committee members a model of a special freight car designed to carry glass.



their entrants. Judging is to be done by professional safety engineers. Fork trucks will be furnished by members of the Material Handling Equipment Dealers Association; gas and electric, 4,000-lb. capacity trucks to be available in most well known makes.

Rear Admiral R. J. Arnold, the commanding officer of the Oakland Naval Supply Center, is an enthusiastic host of the event. Ellis H. Woolley, a key member of the Center's training staff, and chairman of this rodeo for AMHS, is completing arrangements for the one-day affair to be held in one of the large storage buildings.

Additional information and entry blanks are available from leading fork truck distributors in the Bay Area or from the Fork Truck Rodeo Chairman, Code 44a, Naval Supply Center, Oakland 14, Calif.

First meeting of Investment Casters Society

OPERATING PLANS were drawn up at the first meeting of the Investment Casters Society held in Los Angeles.

The basic areas of work will be arranging good programs of timely interest to the general membership and working on a speakers' bureau arrangement by which prepared talks, display boards and slides could be made available to customers and interested engineering groups.

The following committee assignments were made: Program—George Ward of Arwood; Membership—Frank Tayler of Joseff; Wage Survey—Myron Orbaugh of Bone Engineering; Bulletin—Dick Ellis of the Dick Ellis Co.

Next meeting will be Oct. 20 with Tom Carolyn of Lockheed as speaker. Further information and reservations may be obtained through Allen O. Smith, chapter president, at 908 Venice Blvd., Los Angeles 15, Calif.

National Screw Machine Products meetings

A SERIES OF WEST COAST district meetings have been scheduled by the National Screw Machine Products Association. The first session took place last month and sessions will continue on through June of 1960.

Meetings are open to non-members, said William J. Scully, Jr., Crellin Machine Co., Los Angeles, who is chairman of the Western district. Scully said that Los Angeles will be the scene of the Association's National meeting, scheduled for April 3-6 at the Ambassador Hotel.

National Assoc. of Purchasing Agents Convention

PLANS FOR THE National Association of Purchasing Agents Convention were drawn recently during a meeting of the Los Angeles general convention committee. The convention is scheduled for May 22-25, 1960.

Heading the committee is E. Benton Long, purchasing agent for US Lime Products Div., Flintkote Co. Other head committeeman is Victor Quam, chief deputy purchasing agent, Los Angeles County.

The 1960 convention will develop themes of interest to purchasing management from both large and small firms.

American Marketing Association new division

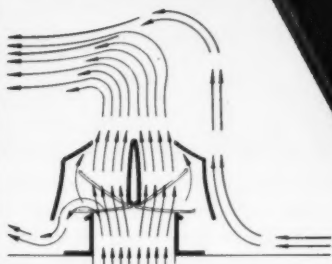
AMERICAN MARKETING ASSOCIATION, Southern California Chapter, has formed an industrial and defense

... continued on p. 14

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MEETINGS

(continued)

marketing division to foster greater awareness of marketing concepts of defense and industrial products.

The industrial products section is headed by Thomas G. Pearson of Marquardt, who will stress product diversification and new product development. Defense industries will be represented by Gene H. White of Leach Corp. The new division is directed by James T. Parry, Hughes Aircraft.

William C. Snyder, Thompson Ramo Wooldridge, is program chairman for both sections.

Preventing executive tension

FEATURED SPEAKER for the Sept. 12 meeting of the Los Angeles Chapter, Society for Advancement of Management, was Dr. Edward Stainbrook, chief psychiatrist, LA County General Hospital, who initiated a series of programs on "Arts that Enlarge the Management Man." Dr. Stainbrook is a specialist in cause and prevention of executive tensions.

Metallurgy in semiconductor processing

MEMBERS OF THE Los Angeles Chapter, American Society for Metals, heard discussions of the contribution of metallurgy to semiconductor processing techniques during the Oct. 7 meeting held at Ethyl Auditorium in Los Angeles.

Discussion moderator was John T. Milek, Hughes Aircraft Co., who led the forum on topics related to semiconductor production such as growth of crystals, junction formation, electrode attachments. Panelists were Leonard Bernstein, Hughes Aircraft Co.; Will Parish, International Rectifier Corp.; Dr. Cy Prussin, Pacific Semiconductors Inc.; and John Quetsch, Hughes Aircraft.

ASM plans for future meetings extending into 1960 include programs on aircraft and missiles, heat treatments, electronic problems and processes.

A symposium on sealants and sealing of aircraft, missiles, and electrical components will be held Oct. 28-30, under sponsorship of the Society of Aircraft Materials and Process Engineers.

Subject matter will include the efforts of hundreds of



PACKAGING COURSE—Members of the Central Calif. chapter of the Society of Packaging and Handling Engineers (SPHE) are shown formulating plans for a short course in Packaging to be offered around the first of the year. Pictured (left to right): R. A. Koller, past president; Jack Cunningham, treasurer; Art Erickson, secretary; Fred Hannum, executive vice president; Bob Watson, chairman-membership; Don Becklin, vice-president-packaging. Other committee members include: Tom Settle, vice president-material handling; Nick Appollonio, vice president-education; Bob Sherry, president; Dick Cambridge, chairman-house committee.

technical men in design and fabrication of military and civilian sealant systems.

The symposium will meet at the Institute of Aeronautical Sciences Building, 7660 W. Beverly Blvd., Los Angeles. Dates are concurrent with the Aircraft Electrical Society Show which will be underway at Pan Pacific Auditorium, adjacent to the IAS Building. Tickets to the AES show will be a part of the symposium registration procedure.

Speakers, program for M-H, Packaging course

PLANS HAVE BEEN COMPLETED for a combined short course in packaging and material handling and plant layout, scheduled for Nov. 15 to 20 at the University of California Conference Center at Lake Arrowhead.

Packaging session will include discussions of cost, function, various types of packaging material, fasteners, package testing and development.

Material handling and plant layout sessions will include problem layouts, analyzing M-H problems, storage, selecting M-H systems, warehousing, shipping and receiving, cargo containers.

Many of the instructors will be from the San Diego and Los Angeles chapters of the American Material Handling Society and Society of Packaging and Handling Engineers.

Further information may be obtained from officers of these organizations or from the University of California Extension, Los Angeles 24, Calif.

Space Age event on biennial basis

THE WESTERN SPACE AGE Conference and Exhibit has been established as an every-other-year event, the Los Angeles Chamber of Commerce announced yesterday.

Burgess Dempster, chairman of the sponsoring Industrial Market Development committee, said the next event would be held in late spring, 1961.

The first Western Space Age Conference was held under Chamber of Commerce auspices in March, 1958. The second was conducted in March of this year. Both attracted more than 125,000 visitors each and drew nation-wide attention to Southern California as a key Space Age center.

Seminars on military packaging

THE "WHY" AND "HOW" of military packaging requirements will be explained by naval personnel in half-day conferences to be held in more than 30 cities during the next 12 months.

The session will be open to management and packaging executives of all industries now working on government military contracts or contemplating such work in the future. In each locality, the seminar will be sponsored by the office of the Inspector of Naval Material.

Arrangements to attend any one of the seminars may be made through the closest Navy Inspector's office. Cities where seminars will be held in the West include Long Beach, San Francisco, Portland, and Seattle.

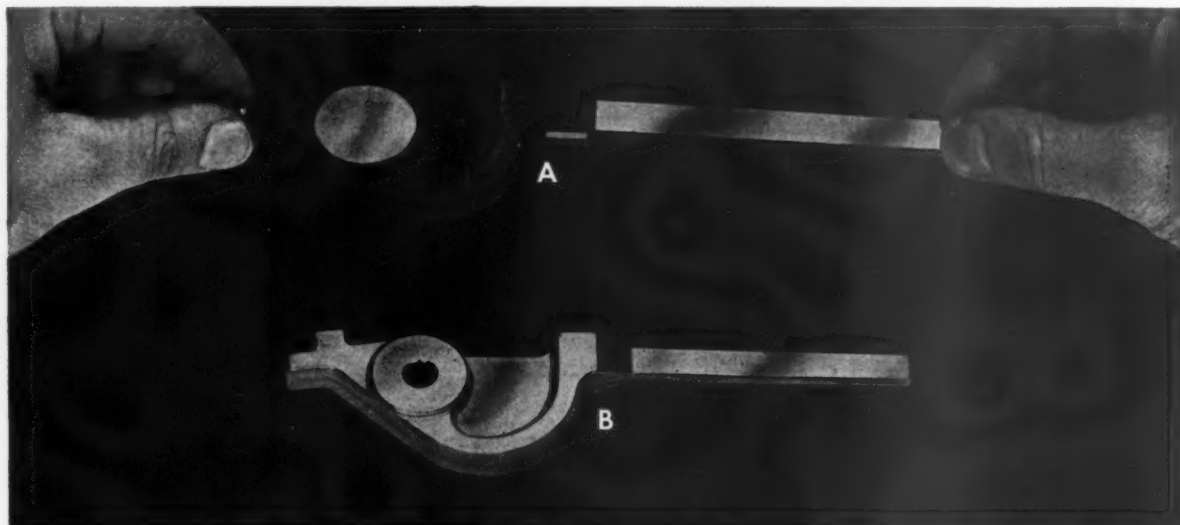
"Plastics in Packaging" conference

TOP-FLIGHT EXPERTS in both plastics and packaging

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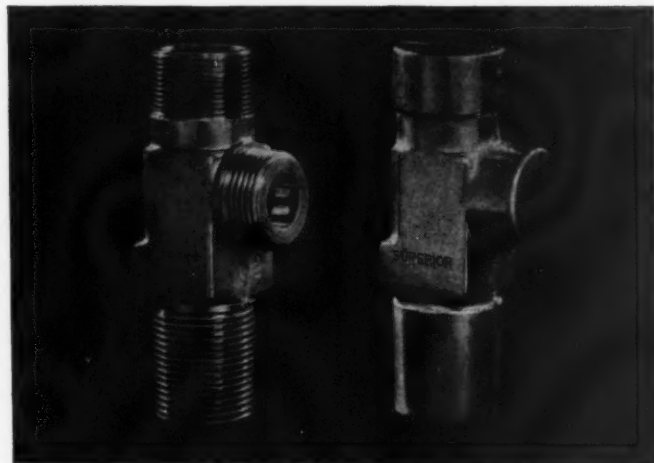
QUALITY CONTROL PLUS SAVINGS

Value analysis suggested the use of a die-pressed forging. The result: an 85% cost reduction and a stronger, tougher part.



SWITCH BLADE in overspeed limiting device on large General Electric motor-generators was originally an assembly **A**—an arm brazed to a brass casting which was machined, slotted, and drilled. After review in the company's Value Analysis program, assembly was replaced by Anaconda die-pressed brass forging **B**.

The superior strength of twice-wrought metal made possible a one-piece part. The excellent finish and consistent dimensional accuracy of the die-pressed forgings eliminated all machining but the drilling operation. The over-all cost is 15% of the original part.



VALVES FOR CHLORINE AND FLUORINE shipping containers must have unusual corrosion resistance and high strength. Superior Valve & Fittings Co., Pittsburgh, specialists in handling halogens, looked for a forging alloy that would be suitable. American Brass Company metallurgists suggested die-pressed forgings of a slightly modified Everdur®-1014, an aluminum-silicon bronze, for this chlorine-fluorine service, and this customer is finding wide use for it in other severe service, too. The twice-wrought metal of Anaconda die-pressed forgings has dense structure to prevent leaks—strength and toughness to take rough handling. Yet it can be machined in automatic-chucking machines resulting in good cost control.

THE vital job of controlling quality and costs may be easier than you think. Anaconda technical specialists will gladly help you find the right alloy and mill form to do both. See your American Brass Company representative or write: The American Brass Company, 14900 Garfield Ave., Paramount, Calif. In Canada: Anaconda American Brass Ltd., New Toronto, Ont.

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DIE-PRESSED FORGINGS SPECIAL-SHAPE TUBES
EXTRUSIONS FABRICATED METAL PARTS

products of
ANACONDA®

made by The American Brass Company

MEETINGS

(continued)

will headline a one-day conference scheduled for Nov. 19 at the Claremont Hotel, Berkeley.

Keynote speaker will be McKay McKinnon, Jr., Chief of District for the Food and Drug Administration. He will explain the new federal legislation regarding food additives, now to include packaging that can "migrate" into food.

Further information may be obtained from the Society of Plastics Engineers, Inc., 65 Prospect St., Stamford, Conn.

New officers of California Redwood Assn.

NEW PRESIDENT of the California Redwood Association is C. Russell Johnson, President of Union Lumber Co. Re-elected Executive Vice President was Philip T. Farnsworth.

Gilbert L. Oswald, General Manager of Simpson Redwood Company, Arcata, was elected to the Board of Directors; and Willard E. Pratt, San Rafael, was elected Secretary-Treasurer.

MHEDA President

Arthur R. Canfield, secretary-treasurer of the M. E. Canfield Co., Los Angeles, has been elected president of the Material Handling Equipment Distributors Association. Active in the material handling equipment field since 1937, Mr. Canfield is one of the original organizers of the MHEDA.



Furniture Manufacturers honor Hawaii

THE FURNITURE MANUFACTURERS Association of Calif. will honor the newest state of the Union, Hawaii, by holding its annual convention in Honolulu.

James M. Riflin, president of Cal Mode Furniture Mfg. Co., who is chairman of the convention committee, announced that delegates will leave Nov. 2 from Los Angeles and San Francisco.

The FMA installation banquet is planned for Nov. 4. There will be two open business sessions on Nov. 6 and Nov. 8.

Engineering-Management courses

THE 1960 ENGINEERING AND MANAGEMENT course for the professional development of managers and engineers will be held from January 25 to February 4 at the University of California, Los Angeles.

The 10-day program will offer a choice of 22 subjects to fit the needs of both executives of large industries or of middle-level personnel from smaller companies.

Information on registration and living accommodations may be obtained from Reno R. Cole, College of Engineering, University of California, Los Angeles 24.

AIEE Western Regional Conference

THE WESTERN REGIONAL CONFERENCE of the American Institute of Industrial Engineers (AIEE) will be held October 23-24 at the Brown Palace Hotel in Denver.

Theme of the conference is a "Management Shopping Center." Sessions will deal with all phases of industrial engineering designed to increase the ability and value of the individual as a member of the management team.

Further information may be obtained from AIEE Western Regional Conference Headquarters, Brown Palace Hotel, 17th and Tremont, Denver 2, Colo.

Western Meetings You Should Attend

Oct. 11-16—AMERICAN SOCIETY for TESTING MATERIALS. Third Pacific Area and National Meeting. Sheraton-Palace Hotel, San Francisco. For further information, write: ASTM, 1916 Race St., Philadelphia 3, Pa.

Oct. 13-14—SOUTHERN CAL. SOCIETY OF PLASTICS ENGINEERS. "Progress in Plastic Engineering" will be the general theme of the technical conference. Scheduled for the Ambassador Hotel, Los Angeles. Contact Jack Fuller, Chemical Div., Rexall Drug and Chemical Co., for further details.

Nov. 2-8—FURNITURE MANUFACTURERS ASSN. OF CALIF. Annual convention in Honolulu. Contact Public Relations Dept., Los Angeles Home Furnishings Mart, 1933 South Broadway, Los Angeles 7, Calif.

1960

Feb. 4-6—GOLDEN GATE METALS CONFERENCE. Fairmont Hotel, San Francisco. Further information from R. L. Ray, Pyromet Brazing & Heat Treating Co., San Francisco.

March 23-26—10th BIENNIAL ELECTRICAL INDUSTRY SHOW. Augmented by the Lighting Exposition. To be held at Shrine

Exposition Hall, Los Angeles. Sponsored by the Electrical Maintenance Engineers Association of Southern California. For further details, contact Fred J. Tabery, 3443 South Hill St., Los Angeles 7, Calif.

April 25-29—AMERICAN WELDING SOCIETY. 41st annual meeting and welding exposition, Los Angeles. For further information write American Welding Society, Dept. P, 33 West 39th St., New York 18, N. Y.

May 3-5—WESTERN JOINT COMPUTER CONFERENCE. Theme will be "Computers—Challenge of the Next Decade." Sponsors are the Institute of Radio Engineers, AIEE, and Association for Computing Machinery. Meeting will be in San Francisco. Write to Box 214, Station A, Palo Alto, for further details.

May 11-13—THIRD WESTERN REGIONAL MATERIAL HANDLING SHOW. Sponsored by AMHS in Great Western Exhibit Center, Los Angeles. Further information from Material Handling Show, Inc., 2807 Sunset Blvd., Los Angeles 26, Calif.

July 19-21—WESTERN PACKAGING and MATERIALS HANDLING EXPOSITION. Sponsored by top packaging and material handling leaders, at Pan Pacific Auditorium, Los Angeles. Contact Western office, Clapp & Poliak, 759 Monadnock Bldg., San Francisco 5, Calif.

STANDARD ENGINEER'S FIELD REPORT

PRODUCT **CHEVRON**
MULTI-MACHINE OIL ICH
FIRM **VALLEY ICE COMPANY**
Stockton, California

Compressor works 17 years without reboring



Only wiper and seal rings on this giant ammonia compressor were replaced by Valley Ice Company, Stockton, Calif., in 35 years service using Chevron Multi-Machine Oil ICH (formerly Calol). Machine was rebored in 1941. At recent routine inspection, chief

engineer T. G. Griffith (above) reports no pitting or corrosion of interior parts. Machine was returned to service without repairs or new parts. This ball compressor, with 17" bore and 36" stroke is powered by 625 H.P. synchronous motor.



Chevron Multi-Machine Oil ICH is also used in second large horizontal compressor (above) and three smaller verticle compressors. Reports plant manager H. W. Hedburg: "Normal service life for these compressors is five to seven years before they need new pistons and rings. But one compressor, after 11 years on same pistons and rings, is still in top condition." Plant has capacity of icing 350 Western Pacific freight cars per day, or 525 tons of ice.

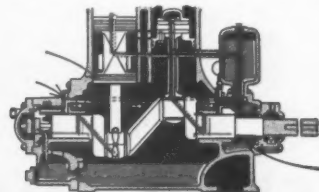


TRADEMARK "CHEVRON" AND CHEVRON DESIGN REG. U.S. PAT. OFF.

STANDARD OIL COMPANY OF CALIFORNIA

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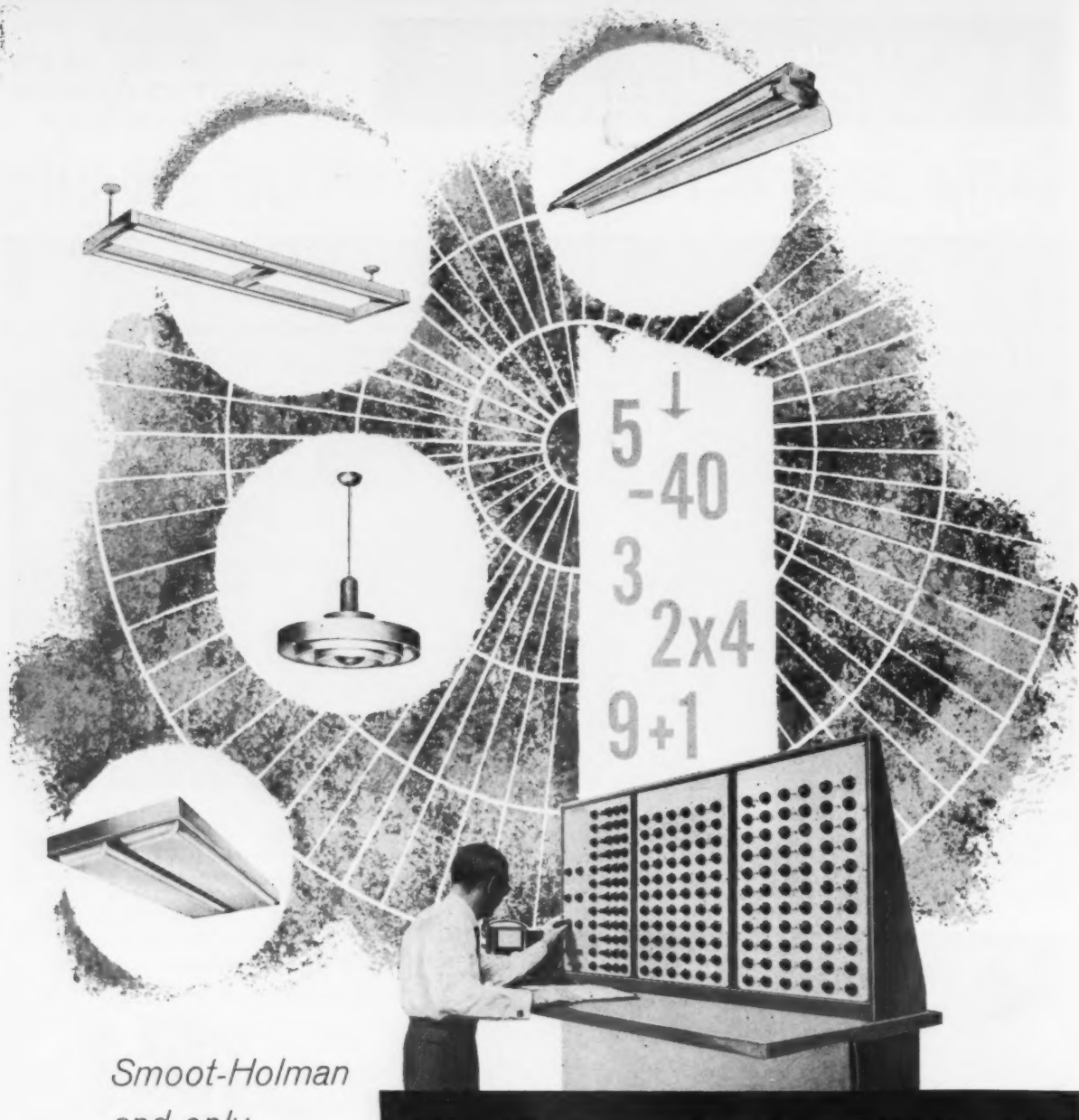
Why Chevron Multi-Machine Oil ICH reduces maintenance on bearings, pumps and compressors



- Resists formation of deposits; has extremely low pour point.
- Metal-wetting ability keeps oil on bearing under heaviest loads.
- Separates rapidly from water and contaminants.

For More Information on this product or a copy of the new free catalog: "A Lubricant Reference Guide to Economical Equipment Operation," call your Standard Engineer or Representative, or write 225 Bush St., San Francisco 20, California.

... for more details, circle No. 11 on Reader Service Postcard



*Smoot-Holman
and only*

SMOOT-HOLMAN

*has this
ingenious
computer*

This scientific Smoot-Holman analogue computer can find the solution to your lighting problem. For example, after being fed all relevant facts such as length, breadth, height, reflection value of floors, walls and ceilings, quality and amount of light required, this computer scientifically determines requirement specifications of fixtures that will deliver desired performance.

Contact Smoot-Holman for the correct solution to your lighting problem.



SMOOT-HOLMAN COMPANY
Inglewood • California

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PAYLOADER®



PAYLOADER® units do many jobs:

- Unload railcars
- Load trucks and cars
- Feed mullers, crushers
- Charge hoppers, bins,
conveyors
- Build stockpiles
- Spot and shift rail cars
- Push trucks

Indoors or outdoors

... wherever you have bulk materials to move ... there's a "PAYLOADER" size and type to do the job ... carry capacities from 2,000 to 12,000 lbs. Ask your Hough Distributor for a demonstration.

HOUGH®



THE FRANK G. HOUGH CO.
LIBERTYVILLE, ILLINOIS

SUBSIDIARY — INTERNATIONAL HARVESTER COMPANY



Standard Fire Brick Co., Pueblo, Colorado replaced a larger tractor-shovel with a model H-25 "PAYLOADER" feeding a jaw crusher from piles of silica rock, cull brick and two grades of clay. It is the newest of seven "PAYLOADER" units that Standard has purchased through the years including a large 4-wheel-drive type that handles heavier loading and mixing work.

The many superior features of the new H-25 benefit both the operator and the management. As operator Jess Rodriguez puts it, "My new loader is faster, easier to get around among the stockpiles and to keep ahead of the crusher. The bucket control is great too ... makes clean hopper-loading simple."

With 2,500 lb. carry capacity, only 6 ft. turning radius and easy power-steering, the Model H-25 is the most concentrated package of tractor-shovel productivity in its size range. Power-shift transmission with two speeds forward and reverse, power-transfer "no-spin" differential, and 4,500 lbs. of bucket breakout force are other outstanding features that speed production and reduce operator effort.

THE FRANK G. HOUGH CO.

889 Sunnyside Ave., Libertyville, Ill.

Send data on complete "PAYLOADER" line and attachments

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Title _____

Company _____

Street _____

City _____

State _____

10-A-3

Accurate, reliable temperature control need not be expensive

By John W. Ritter, Test Engineer
Sarco Company, Inc.

Temperature regulation equipment for food processing should be simple to use and easy to maintain. It should be absolutely reliable for the protection of the product—and inexpensive enough to use economically.

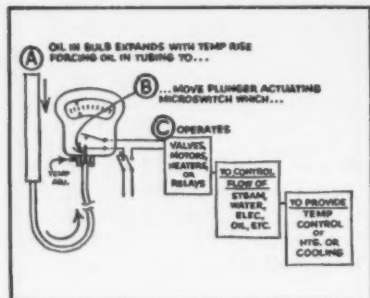
The satisfaction of these multiple demands is a matter of selecting controls that match the job, buying only the amount of control you need and no more.

A very good solution to this problem is the specification of a Sarco Electric Indicating Control. This type of control allows you a wide selection of ranges and adjustment within those ranges for your exact operating conditions.

The same unit can be used for controlling steam, water, or electricity and will regulate heating or cooling or both.

For additional flexibility in controlling heating or cooling, various interval timers and other control devices can be incorporated with Sarco Electric Indicating Temperature Regulators.

Sarco Electric Indicating Temperature Regulators include large easy-to-read dials with both actual and set temperatures on one scale, graduated in regular, even increments.



This rough sketch shows how the Sarco LSI Electric Indicating Temperature Control can be used to actuate valves or relays, control flow or provide temperature control for heating or cooling.

In addition to simplicity and reliability, the Sarco control can be quite easily maintained by the regular maintenance crew, and its installation is a simple and inexpensive job.



Installed on jacketed kettles, such as that shown here, the SARCO LSI electric temperature controller responds to temperature changes of $\pm \frac{1}{2}^{\circ}\text{F}$.

You get the sensitivity you need—
.....
in the range you need — with
.....
reliable SARCO Electric Indicating Regulators

Sarco Electric Indicating Temperature Controllers are low in first cost, and they are inexpensive to install. They provide the sensitivity you need over the temperature range of *your* process. You get response to temperature changes of $\pm \frac{1}{2}^{\circ}\text{F}$. You change control settings simply by turning one knob. You get a continuous visual check on process temperature by reading both set and actual temperature on one large scale.

Sarco Electric Indicating Temperature Controllers are available for temperatures from 90°F. to 650°F., in operating ranges from 100°F. to 400°F. In addition, they offer many switch sequence combinations, such as step-heating, heating and cooling, and temperature control with the operation of visual or sound signaling devices.

Write today for our latest bulletin on Sarco Electric Indicating Controls.

4928-B

SARCO
COMPANY, INC.
635 Madison Ave., New York 22, N. Y.

TEMPERATURE CONTROLLERS • STRAINERS • STEAM TRAPS • HEATING SPECIALTIES

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WESTERN INDUSTRY/OCTOBER 1959

... for more details, adv. opp. pg., circle No. 15 on Reader Service Postcard →



LOS ANGELES PLANT

The Center of Steel Service in the West...

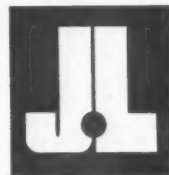
J&L's Los Angeles Plant maintains one of the largest stocks in the West of stainless steel sheet, strip, bar, wire and plate; aircraft quality alloys; spring steel; coated steels; precision cold rolled strip steels; aluminum, brass and copper.



FOR SERVICE CALL:

- **LOS ANGELES:** RAYmond 3-4581
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- **SAN DIEGO:** CYpress 5-2161
- **SEATTLE:** EMerson 4-1040
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LOS ANGELES PLANT



STAINLESS AND STRIP DIVISION

AUTOMATION BEGINS HERE

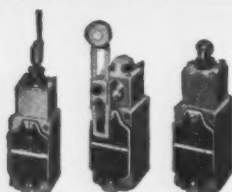
... Insist on Allen-Bradley accessories
for continuous automatic production



In this broad line of Allen-Bradley accessories, each and every unit carries the traditional A-B trademark of *quality* that stands for trouble free operation. Rugged construction, and maintenance free, silver alloy contacts provide the reliability that is essential to the continuous operation of *your* automatic production machines.

Profit from the experience of the leading machine tool builders ... insist on Allen-Bradley *quality* motor control *all the way!*

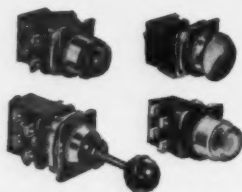
Special push button panels can be assembled to your specifications.



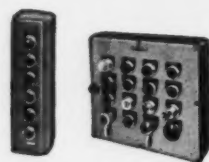
OILTIGHT LIMIT SWITCH
Bulletin 802T with sealed heads and bodies. Various operators.



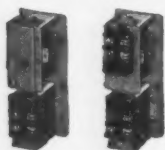
PRECISION LIMIT SWITCH
Bulletin 802 oiltight. Responds to very small operator travel.



OILTIGHT CONTROL UNITS
Bulletin 800T. Choice of push buttons, lights, and switches.



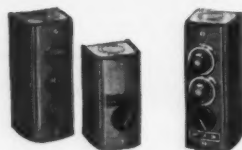
OILTIGHT CONTROL STATIONS
Bulletin 800T for up to 16 units in die cast aluminum enclosure.



PNEUMATIC TIMERS
Bulletin 849. Reliable and accurate. For on-delay or off-delay.



OILTIGHT PRESSURE CONTROL
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STANDARD DUTY PUSH BUTTONS
Bulletin 800. Up to three units, also pilot lights and switches.



FOOT SWITCH
Bulletin 805. In rugged die cast housing for toughest service.

ALLEN-BRADLEY | QUALITY MOTOR CONTROL

Allen-Bradley Co., 1323 S. First St., Milwaukee 4, Wis. • In Canada—Allen-Bradley Canada Ltd., Galt, Ont.

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A & A Supply Co., 114 Morningside Drive, N. E., Tel: Alpine 6-0307

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Edward P. Weller & Co., 1902 E. Rovey Ave., Tel: AMhurst 6-3188

SEATTLE 1—J. A. Tudor & Associates, Inc., 2605 Western Ave., Tel: MUtual 2-7444

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SALT LAKE CITY 10

Stevens Sales Co., 1482 Major St., P. O. Box 2338, Tel: INgersoll 7-5489

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James A. Setchell, 301 W. "G" St., Tel: BElmont 3-3981

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Campbell & George Co., 1601 Cortland Ave., Tel: MIssion 8-1236

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WESTERN INDUSTRY/OCTOBER 1959



Savings match the load!

You're seeing a Gerlinger Fork Lift Truck showing some of the remarkable stamina and stability that causes users to say, "Our first choice is Gerlinger for the BIG JOBS!"

What you can't see till you own one are the tremendous savings you gain. As you move more tons per hour . . . at much less cost . . . your profits increase in proportion. Gerlinger offers standard gas-powered, pneumatic-tired, *Job-Proved* fork lift trucks that handle as much as 40,000 pounds per trip. (Diesel engines optional.)

Want to see how savings match the load? Ask for Certified Job Studies covering your specific handling operations—and new Gerlinger Specifications Folder GSS. Write Towmotor Corporation, Cleveland 10, Ohio or Gerlinger Carrier Company, Dallas, Oregon.*

TOWMOTOR
THE ONE-MAN-GANG

-GERLINGER

LEADERS FOR 40 YEARS IN BUILDING
FORK LIFT TRUCKS, CARRIERS AND TRACTORS

*Gerlinger Carrier Co. is a subsidiary of Towmotor Corporation

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Power plant engineers and utilities also come to National Supply for special steel products



They get high pressure-temperature forged bored fittings—including Y, T, L and lateral shapes—made to their exact specifications.



National has the largest integrated machinery-making plant in the West!

National Pressed Steel Forgings • Billets and Large Bars • Steel Castings and Special Machinery • Melting • Forging • Casting • Machining • Heat Treating • Assembling • Welding • Testing



THE NATIONAL SUPPLY COMPANY

Subsidiary of Armco Steel Corporation



Torrance, California • Los Angeles Area

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WESTERN INDUSTRY/OCTOBER 1959



QUALITY CONTROL for sophisticated manufacturing

Western missile, atomic energy, chemical, pulp, etc. industries demand greater precision from basic materials. Here is how one firm is supplying this need . . .

AS "SOPHISTICATED MANUFACTURING" grows in the West, Western plant operators must introduce a lot of new techniques and equipment to stay in business.

This sophisticated manufacturing—in which great care must be used in producing a precision product—has increased because of the demands of our missile, atomic energy, chemical, pulp, and other industries.

Take high alloy and stainless steels as examples of products needed by these Western industries. These steels must stand up under exacting requirements of corrosion, abrasion, high temperature, and impact.

That's why firms like Electric Steel Foundry Co., Portland, Ore., have introduced many rigid controls into their steel making. Similar controls are being introduced in all phases of the Western manufacturing picture.

Here is what ESCO is doing:

1. *Scrap preparation.* Scrap of known quality is purchased. Then it is carefully sorted in order to avoid contamination with non-ferrous and other harmful materials. Most high alloy scrap is pre-melted in pig heats to determine exact chemical composition.

Finally, all scrap for each heat is measured and weighed carefully before going into the furnace.

2. *Furnace melting.* Electric arc furnaces are used mainly at ESCO, although induction furnaces are used

for some special alloys. ESCO—which had the first electric furnaces West of the Mississippi—has found that it can maintain close control of carbon content in the arc furnaces. The furnaces are basic lined.

Control of slag basicity is extremely critical in order to avoid a carbon pickup or "creep." The basicity is kept low to prevent this "creep" until the last few moments of the heat, when the slag is raised in lime content in order to obtain chromium recovery.

When melting in arc furnaces, the metal attains a certain minimum temperature before the injection of oxygen. Oxygen is introduced directly into the molten metal at a pressure of 110 lb. per sq. in. through a ceramic protected lance. The length of time of oxygen injection is carefully calibrated with the volume of metal being boiled and the initial carbon level.

With a method like this, the carbon content can be controlled to 0.02%.

3. *Testing before casting*—ESCO has one of the most modern control laboratories in the industry. This lab paces the operation every step of the way. For example, after the metal is molten a sample is taken and rushed to the lab. Here the chemical composition can be analyzed in seconds by a spark sample on a direct reading spectograph.

Before pouring a polaroid X-ray picture is taken of a sample to check for sensitivity to gas content in the mixture. The firm is one of the few foundries in



WEIGHING SCRAP precisely is first step . . .

the United States with a Serfass gas analyzer that can determine the hydrogen content of the mixture in 8 minutes.

4. *Casting techniques and controls.* The ESCO sand laboratory develops sand for molds in accordance with scientifically determined requirements. For some of its special high alloy steels, the company has developed special sands that assure quality castings.

The firm uses three main casting techniques. (1) static casting; (2) shell casting; (4) centrifugal casting.

Static castings are those poured in conventional sand molds. These castings follow standard procedures. But the care and quality control that accompanies casting enables the company to produce many intricate designs and shapes. One example is a multi-stage pump casing that weighs over 17,000 lb. Both halves of the casting were produced in baked sand molds to obtain intricate detail and fine surface finish.

The ESCO Spuncast technique is a centrifugal casting method that distributes and holds the metal against the mold until solidified. This produces a tubular ele-

ment of suitable chemical balance and homogenous structure. Spuncast produces sizes up to 36-in. OD, 16-ft. long with a wide range of wall thickness . . . and special symmetrical shapes.

Shellcast is an advanced casting technique where the metal is poured into a strong, lightweight shell of high quality fine sand bonded with a plastic resin.

Contact with the heated metal surface of the pattern and further baking gives this resin-bearing shell a hard, smooth surface—much smoother than any normal foundry mold. This produces castings of fine smoothness and sharp contour definition.

Sections less than $\frac{1}{8}$ -in. can be shellcast and tolerance of plus or minus 0.010-in. per in. can often be maintained.

When pourings are made, laboratory technicians use immersion thermocouples to check pouring temperatures carefully. Other tests made on castings and test samples include black light (Zyglo) inspection, tensile and yield strength determination, and a radiographic, dye penetrant and magnetic particle inspection, and air and hydrostatic testing.

Besides some of the tests above, a sample may be polished and examined through a microscope at magnifications up to 2,000 diameters.

5. *Heat treating.* Gas fired heat treating ovens are used along with water or air quench. In the case of manganese steels, the castings are heated to between 1825 and 1950 deg. F. and then rapidly quenched in agitated water.

In some cases, steels would be reheated to 900 F. for further toughening.

6. *Final inspection*—Besides usual visual and dimensional checks, ESCO uses two outstanding pieces of equipment—a 24,000,000-v. Betatron and a 220,000-v. X-ray machine.

The Betatron—essentially a high-powered X-ray machine—is the only one in industrial use West of the Mississippi. It is a Model RTI built by the Allis-Chalmers Mfg. Co.

The Betatron can penetrate up to 20 in. of steel. It can penetrate 6 in. of steel in 60 sec. and thicker sections in a matter of minutes.

For smaller thicknesses, up to 2 in., the 220,000-v. X-ray machine is used. Both of these machines can detect minute internal flaws in both castings and welding.

Add it all up . . . and you have sophisticated quality control for a sophisticated product.

FINAL INSPECTION with critical Betatron . . .



VISUAL, HAND inspection play their parts . . .



UPPING PRODUCTION

with new power, handling . . .

Production line includes automatic depalletizers . . . small but efficient horsepower units . . .

RECENT INCREASES in the consumption of Pennzoil canned oil have resulted in a new production set-up at the manufacturer's Los Angeles plant, where base oils from Pennsylvania are combined into finished motor oil.

Cans arrive in a palletized form and are automatically depalletized by rows, being swept off into

a "water fall" which allows them to be automatically fed onto overhead conveyors.

They are then fed into a 14-pocket filling machine which accurately measures a quart of oil into each can. Lids are fixed at a rate of 240 cans per minute.

After sealing, the cans are carried on a conveyor to a boxer unit where they are stacked in four rows and packed 24 cans to a case.

The cases pass through a gluer and under a compression belt, before being carried forward to a palletizer which forms the cases into a pattern and places 48 cases onto 4x4-ft. pallets.

Pallets are then taken by fork lift and stacked three high to await shipment.

Power transmission aspects of this operation are interesting because of the way in which small hp. motors are used in combination with gravity flow lines.

The depalletizer is driven by three fractional hp. units; the overhead conveyor required only one small electric motor to drive the 5/16th-in. cable.

Feed to the filler machine is completely by gravity.

The filler is powered by electric motor (7½ hp. variable speed drive) and the automatic lid closer is hooked up to the same unit. The conveyor from the closer to the gluer (which elevates the cases to approximately 9 ft. in height) is powered by a similar small electric unit. Gravity is used to form the final pattern before packaging.

The total hp. driving the whole system is only 30 hp.—the secret of success has been to keep balanced loads.

The result is an operation where 240 cans a minute are handled with very low maintenance.

*NEW PRODUCTION SETUP shows efficient layout and work flow.
This line handles 240 cans per minute.*



ONE STOP, ONE MAN delivery system

Modified delivery truck, Transporter with skid adapter . . .

A ONE-STOP, ONE MAN DELIVERY SYSTEM is the result of two engineering ideas involving (1) a modified delivery truck and (2) a Transporter with a hinged platform or skid adapter.

These innovations have been put into effect by the Zellerbach Paper Co. of San Francisco. Before the modification program, Zellerbach was a frequent user of outside common carriers to help in peak periods. An existing lowbed chassis truck was inadequate, for not more than three or four skids of paper could be carried at one time—due to the loss of floor space taken by the wheel housings. Also, it was difficult and hazardous to remove the tonnage merchandise from the truck bed where the customer had no lift equipment.

First off, a high-bed cab-over truck's load capacity was increased to approximately 24,000 lb. by adding a trailing axle. Then a specially designed hydraulic lift gate measuring 6 x 8 ft. was installed on the truck. To reduce its overall length, the gate was constructed to fold up against the back of the van. There it serves another purpose—a tail gate.

Piggy-backing an Automatic Transportation Co.

low-lift pallet truck is also paying off great dividends as a time-saving move. The feature that has added to its versatility is the platform structure which comes down over the pallet forks. This skid adapter is hinged to the back plate of the pallet forks. When not in use it folds back against the battery housing. Standing upright, it serves as a backstop for pallet loads which are highly tiered.

The Automatic Transporter, electric powered low-lift, is used in the loading of the truck in a first-last sequence. The walkie is left under the last load placed on the truck. Upon arrival at a stop the gate is lowered to the bed level of the truck. A safety stop is placed at the end to prevent the truck from rolling off. The load is then raised and brought onto the gate which is lowered. The operator often stands on the magnesium ramp which is attached securely to the gate's end. When the gate reaches dock height or side-walk level the load is taken away either over the ramp or directly onto the dock.

The over-the-road truck and the Transporter are now executing a time and money saving function. The two trucks have paired to make a one-stop delivery system dream come true.

EXHAUST SYSTEM for hot compression molds

Low silhouette, high duty roof ventilators installed . . .

BECAUSE HEAT IS BASIC in modern industrial processes, factories need adequate cooling to compensate for excessive heat generated from metal melting, machine tool operations, heavy illumination and roofs heated by the sun.

This vital cooling problem was solved for Almac Manufacturing Co., El Monte manufacturer of plastic products and custom molding equipment, by installation of Colt Ventilation of America's natural ventilating system.

Colt Hi-Duty, low silhouette roof exhaust ventilators were installed on the roof over hot compression molds. The system uses heat from the molds to produce a thermal flow within the building to carry away excess heat through the ventilators on the roof.

Benefits from this installation were so apparent that Almac management ordered seven more units of the same type for installation over the machine shop department.

Comparison of temperature readings made before

and after installation of Colt units shows heat control potential. On April 6, 1959, a cool Spring day, roof heat from the sun was not a factor since outside temperatures were 66° F. Temperature rise in the building, due to process heat, was 21° F. In the work zone it was 80° F. With solar heat added, it was calculated that a 40° F. rise could be expected by summer.

Comparative readings were taken on July 9, 1959, a hot summer day with roof solar heat a positive factor. It was established that Colt equipment limited temperature rise in the work zone to 3° F.

In the area under the roof and immediately over the hot equipment, only a 6° F. temperature rise was measured. Outside shade temperature was in the middle nineties.

The ventilation rate had been increased seven and one-half times and 115,000 BTU/hr. were being removed. Almac officials reported an increase in worker morale and efficiency with no interruption in production during installation of Colt equipment.

RELIABLE POWER UNITS

for jet engine testing...

Overhead bus-duct, combination starter layout with no control centers allows extreme portability and flexibility...

WHEN UNITED AIRLINES sends its new DC-8 jets soaring into the atmosphere, it knows that the engines will be properly maintained and overhauled.

This fact is assured by a new facility at the Mainte-

nance Base at the San Francisco International Airport. This facility is as modern and reliable as the service it renders.

All equipment has been chosen for its performance and reliability. Extensive use has been made of combination starters (Arrow-Hart & Hegeman Electric Co.) to control heating, ventilating and other equipment. The largest starter controls the 150-hp. compressor supplying air to the entire facility.

All starters are combination with "F" frame circuit breakers type ETI with adjustable trip. Each starter has a 440/220/110-v. control mounted within.

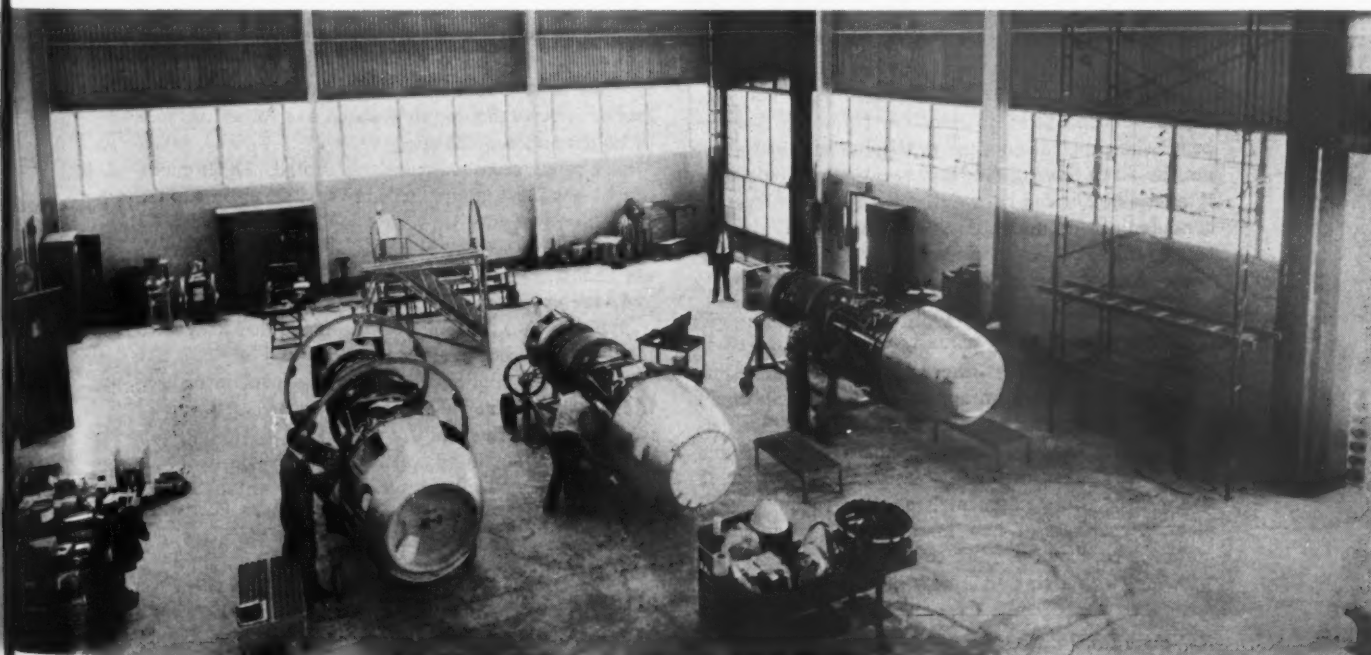
This is an overhead bus-duct combination starter layout with no control centers. This allows for extreme portability and growth potential.

An interesting facet of this design is the fact that most motors have two breakers in series. The overhead bus duct contains a non-adjustable thermal trip breaker at each motor outlet. Below at working level is the starter combination with an adjustable instantaneous breaker.

The instantaneous breaker trips first in the event of a short circuit and thereby eliminates resetting the inaccessible thermal trip breaker in the overhead bus duct. This eliminates down time... and can only be accomplished with an instantaneous trip breaker which always trips before a thermal type.

With equipment like this, United is assured that jet engines can be overhauled and maintained on schedule.

JET TEST CELL BUILDING with three engines on floor for testing. Test cells are at left in vaults, and combination starters are located on wall behind man in background.



LEASING VS. PURCHASE—which is best for you?

Leader in leasing field answers questions about this growing phenomenon . . . this will help you decide if leasing or purchase is best for you.

A RECENT PHENOMENON in the West is the growth of diversified equipment leasing. The leasing of trucks and railroad equipment has long been common but only during the last few years has leasing of almost any type of industrial or office equipment been possible.

Diversified industrial equipment leasing was pioneered in San Francisco. Western companies, particularly those in the electronics field, were among the first to see the advantages in this method of equipment acquisition.

Charles B. Stone, chairman of the board of United States Leasing Corporation, leader in the industrial and general purpose equipment leasing field, answers WESTERN INDUSTRY's questions about this rapidly growing field.

Q: What is equipment leasing?

A: Basically, leasing is a means of obtaining the use of equipment without resort to existing capital or to the raising of new capital. Since payment is made from current earnings, it can be said that leasing provides equipment on a "pay as it earns" basis. An equipment leasing company will obtain the exact type of equipment a client wants and lease it to him for the period of time he believes he will have need for it.

Q: Is there limitation as to type of equipment?

A: Virtually any type or amount of equipment that a company may need can be leased. This may not include expendables, however. A firm may lease a pencil sharpener but not the pencils—a drill press, but not the oil to lubricate it. Leases usually include such things as high speed canning lines, fork lift trucks, air conditioning and inter-com systems, executive aircraft, rolling mills, conveyor systems, machine tools of all types—the list goes on and on.

Q: How does leasing actually work?

A: When a company becomes interested in leasing equipment, it submits an application which tells about its business, financial position and includes other pertinent data. The desired equipment is described and the specific manufacturer is stated. When the lease is approved, the equipment is shipped to the lessee's plant. Regardless of how many pieces of equipment are involved, they can all be covered by a single master lease and with a single monthly payment.

Q: How long do equipment leases generally run?

A: The average is now about five years, but the terms

can be longer or shorter. The lessee determines the length of lease he prefers and the payments are arranged to suit his own needs.

Q: To what do you attribute the growing popularity of leasing?

A: I believe it is a result of the constantly increasing cost of equipment and the fact that industrial leaders are becoming aware of what we call the fallacy of depreciation. Let's assume that a machine shop purchased a \$10,000 lathe in 1949 and the lathe is considered by Internal Revenue to have a ten-year life. This means that over a ten-year period a total of \$10,000 of the machine shop's income will be tax free. In theory, then, in 1959 the \$10,000 capital outlay would have been recovered before taxes and could be used to replace the worn and obsolete lathe.

However, because of inflation, a comparable lathe in 1959 costs \$14,000. Therefore, the machine shop finds itself \$4,000 short of funds to purchase the needed new lathe.

Although recent tax laws provide accelerated methods of calculating depreciation, the continuing inflationary cycle and fast-developing improvements in machinery and equipment tend to favor leasing rather than purchase.

Q: Can you list some additional advantages of leasing?

A: We believe that these are the basic reasons why leasing is becoming highly favored over other methods of equipment acquisition:

1. Leasing conserves working capital. Other methods of obtaining equipment impose a drain on capital.
2. Improves cash flow.
3. Provides tax timing benefits, since lease payments are deductible as a business expense.
4. Preserves established lines of credit.
5. Eliminates the danger of being saddled with worn out or obsolescent equipment.
6. Prevents dilution of company ownership or control which is often made necessary when new capital is obtained for financing.
7. Permits obtaining new equipment when budget is limited; lease payments are tailored to fit within a company's budget.
8. Allows equipment costs to be pin-pointed to a specific contract—particularly useful when working on cost-plus basis.

Q: How does leasing compare with other methods of financing?

A: One hundred per cent financing is provided through leasing and a greater cash flow results than with any other means of financing. Therefore, the relative cost of leasing is below other financing methods. When you spend money to purchase equipment, you are also paying something for the use of the money. Even in the case of outright purchase with cash, a company is giving up the earnings that the working capital would generate. The company is therefore "paying" this amount for using its own money.

Q: Are there any tax benefits in leasing?

A: Lease payments are deductible as a normal business expense, as long as there is no question that the transaction is a lease and not a conditional sale. Lease payments are largest during the years of the basic lease. When these payments are deducted from taxable income, taxes are reduced to the extent of the deductions. But this does not apply to renewal periods, when lease payments are reduced substantially and taxable income is increased proportionally. Thus, the tax question is a matter of timing. Less tax is paid during the period of the basic lease, but more will be paid during renewal periods. This can be an advantage in some situations.

Q: Do lease agreements contain purchase options?

A: They can, but sometimes it is not wise, because a purchase option may convert a leasing agreement into a conditional sales contract.

Q: Is it possible to renew the lease?

A: It certainly is. A renewal option is generally included as part of the original lease agreement. The leases can be renewed at extremely low cost, since the cost of the equipment is entirely paid for during the course of the original lease.

Q: What is the story on sale and leaseback?

A: This is becoming quite popular with companies which need to improve their cash position. They will sell their equipment to us, and we will lease it back to them. They will then have the cash the equipment represents as well as the use of the equipment itself. This can also result in a tax advantage. If the equipment is pretty well depreciated, allowable depreciation deductions may be relatively small. But the moment the company sells, and then leases its equipment back, the lease payments become deductible in full. In such a case, payment deductions may greatly exceed depreciation deductions, resulting in a substantial tax saving.

Q: What yardsticks should a company use to determine if equipment should be leased or purchased?

A: Each company, when studying the question of "lease or not to lease," must examine its own situation carefully. For some companies, there are no outstanding advantages to leasing—to others, it can be an excellent solution to the problem of how to expand operations and still have enough capital to fully exploit the expansion. Care must be taken on income projections to be as certain as possible that anticipated income from use of the leased equipment will at least equal the lease charges.

HERE ARE SOME examples of current equipment leases. It should be understood that the rates charged would not necessarily be the same if another company were to lease identical equipment. Rates will show variation depending upon the credit rating of the lessee, method of payment, length of the lease and type of equipment.

Company: Southern California light aircraft manufacturer

Equipment leased: Two overhead traveling cranes, one 15-ton, the other five-ton capacity. Including appurtenances and installation.

Total cost of equipment: \$44,848.00

Length of lease: Five years

Payment: \$895.00 monthly

Renewal option: \$895.00 annually

Company: San Francisco Area foundry

Equipment leased: Stationary jolt squeeze rollover pattern draw machine with flow valve controls on rollover cycle, and a stationary jolt squeeze pin strip molding machine. Including freight charges.

Total cost of equipment: \$17,860.00

Length of lease: Five years

Payment: \$1,070.00 quarterly

Renewal option: \$375.00 per year

Company: Arizona plastic toy manufacturer

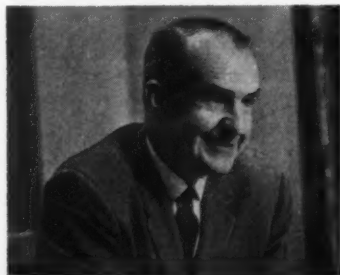
Equipment leased: Three desks, six chairs, electric typewriter, adding machine, two filing cabinets, air conditioner, dictating machine and transcriber, duplicating machine.

Total cost of equipment: \$2,875.00

Length of lease: Three years

Payment: \$93.50 monthly

Renewal option: \$93.50 annually



CHARLES B. STONE, III, chairman of the board of U. S. Leasing Corporation, is a graduate of West Point and has participated in the advanced management program of Harvard Business School. During his military career he was known as "Businessman of the Air Force" as a result of such assignments as Comptroller of Air Force and Commander of Continental Air Command, from which he retired in mid-1957 as Lt. General. He has been chairman of U. S. Leasing Corporation for the past two years.

PALLETLESS CARTON CLAMPS find wider use

Can be used throughout entire handling operation . . .

PALLETLESS CARTON CLAMPS are gradually finding wider and wider use in industry in the West—because of the savings they represent.

Previously, their use has been limited to specialized rural handling operations where palletizing units only have added cost . . . now, the fact that they can handle unpalletized loads has been added to the clamps' capacity for close-stacking, with profitable results.

At the Alpha Beta Markets produce terminal, La Habra, Calif., the palletless carton clamp, attached to a 3,000-lb. capacity Clarklift truck, is used throughout their entire handling operations. Avocado crates as small as 18-in. wide, as well as wider corrugated containers of apples, and lettuce crates in multiple loads to fill a width of 64 in. are all handled without use of pallets.

Loads are carried into a cool room for storage. They are removed as needed for pre-packaging into convenient and saleable units for counter display.

Individual pre-pack items are then placed into pre-pack wood containers for shipment to a variety of over 40 markets.

The carton clamp is constructed from seamless steel slip tube allowing greater strength with less weight. Frame arm and guides are welded into one unit, while a solid steel bushed inner slide is available for heavy cycle operations. Two cylinders furnish clamping pres-

sure and an interlocking load safety rack is an integral part of the clamp. Clamps are attached to the truck with standard fork guides and can be easily detached.

Arms are made of 1-in. steel plate with clamping pads of 5/8-in. aluminum alloy plate. Gripping surfaces are faced with Goodyear Arma-Plate which consists of 3/16 rubber bonded 16 gage steel and fastened to the aluminum platen with tee nuts. Rubber facing along leading and lower edges are attached in separate segments to facilitate maintenance.

Designed to handle loads from 17 to 64 in. in width and approximately 42 in. deep, the clamp has 12½-in. shift in either direction when handling a 47-in. wide load. Shift is diminished as widths increase or decrease in size, and there's no shift available at minimum or maximum arm openings.

Shift and clamp action is controlled by hand levers mounted on the cowl, but to obtain proper clamping pressure a separate pressure relief valve is recommended.

Worth noting, although not presently in use at Alpha Beta Markets, is the newest addition in palletless handling . . . Clark's slender-arm carton clamp. Although this unit is of very similar construction to the one detailed above, it differs in that its total arm width is an unbelievable 1½-in. Capacity is limited to 1,000 lb. at 24 in., however, and it is most effective where loads must be stacked extremely close together.

CUTTING MAINTENANCE COST on valves

Bronze globe valve with special seat and disc solves problem . . .

VALVE SEAT AND DISC FAILURE can spiral maintenance costs. That's what Jantzen, Inc., Portland, Ore. found out in their shrinking and dyeing operations.

Valves in these operations were subjected to heavy duty, frequent throttling service of steam flow at 125 lb. pressure and ranging up to 250-300 deg. F. In this severe use, the firm was reconciled to the rapid "wire-drawing" of valve seats and discs—a formation of minute channels that permitted the escape of steam even with the valve closed tight. Once the wire-drawing started, the valve seat and disc required immediate replacement.

The frequency of valve seat renewals shot up to an average rate of once in every other month, at every valve station.

In a determined effort to reduce costly downtime and time-consuming maintenance, the firm made a

trial installation of a bronze globe valve with Brinallloy seat and disc, a development of the Lunkenheimer Co., Cincinnati, Ohio. The difference in this valve was the development of Brinallloy NS8, a metal far more resistant to wear and corrosion than 500 Brinell stainless steel, even outlasting case-hardened stainless steel exceeding 1000 Brinell.

Coupled with the new alloy was the development of a micro-optically flat seat and disc design, which in four years of field-testing prior to the installation at Jantzen, Inc., required no repairs or replacements of seats or discs.

The LQ600 valves, since their installation at Jantzen over a year ago, are performing perfectly, with no repair or replacement to date. The problem of costly downtime of equipment has been solved, and valve maintenance has dwindled to a fraction of the original frequency.

REMOTE CONTROL HANDLING

for "hot" material . . .

Mobot Mark I resembles a fork lift with steel arms and hands. Can perform a variety of handling tasks . . .

A UNIQUE, REMOTE CONTROL handling device—called "Mobot Mark I"—is going into operation at the Sandia Corp. Radiation Effects Division plant in Albuquerque, New Mexico.

Resembling a fork lift with steel arms and hands, it is in reality a mobile device designed to perform a

variety of lifting, inverting and placing tasks. It is manufactured by the Hughes Aircraft Co., Los Angeles.

For its first application at the Sandia plant, Mobot will pick up and use auxiliary tools such as wrenches, screwdrivers, hammers and shears for dismantling equipment too radioactively "hot" for humans.

Mobot is remotely operated and can function up to 200 ft. from the operator's console. All controls, signals, and data transmission, as well as motive power can travel to and from Mobot and operator through a tri-axial cable.

Over 100 commands can be sent to the device which operates on 7.5 kva. The vehicle has its own battery and d-c. motor. Batteries are automatically recharged and transformer-rectifier installations carried in the vehicle itself provide necessary operating voltages.

The unit is designed to pick up mechanical components, radiated objects, tooling, and instrumentation. Extreme mobility, including 3-ft. horizontal, and 10-ft. vertical reach could make Mobot a versatile handler in industrial environments where man is unable to work because of radioactive or other toxic hazards.

Two remotely controlled TV cameras serve as "eyes" that will take the operator's vision and mind from his shielded console room into the hazardous area.

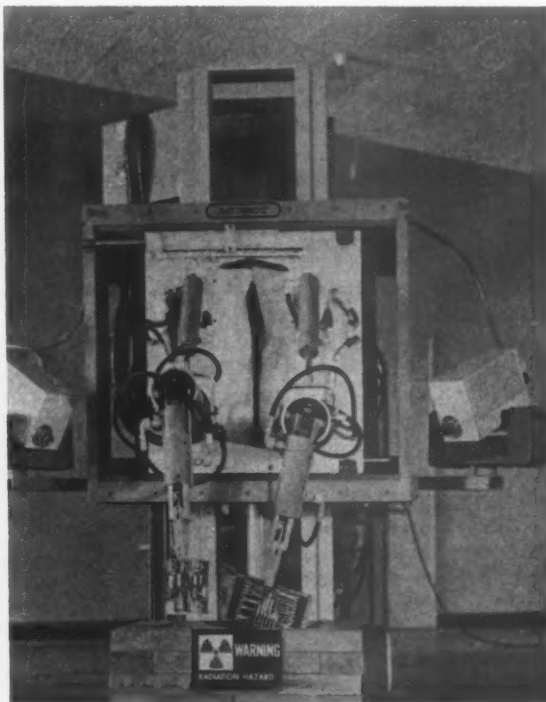
Cameras can sweep 270 degrees with focus and tilting attitudes similar to human eyes. Handling arms are hydraulically powered and can lift 150 lb. each. For more extreme loads, up to 1500 lb., a lifting hook is provided on the mast.

Mobot has four speeds forward, weighs a combined

OPERATOR WATCHES Mobot Mark I movements on a series of TV monitors and controls operations.



MOBOT IN ACTION deftly picks up delicate electronic circuit boards from a simulated radioactive area.



4500 lb. Chassis is a modified Barrett-Cravens fork truck, 84 in. high, 36 in. wide, excluding TV apparatus, and 96 in. long with carrying arms extended.

The first model is the beginning of a family of similar type handlers with sizes planned up to 20 tons. Future models could be designed with reaches of 50 ft. or more, according to Dr. Allen E. Puckett, director of Hughes System development labs.

While the Mark I Mobot series will be designed for indoor applications, outdoor types will also go on the design boards.

Tool and machine handling is accomplished through use of simple, inexpensive handles attached to desired tooling. No changes are necessary in the basic "claw-like" grasping assembly.

Radio controlled models are easily provided since internal control circuitry is standardized to allow use of transmitters and receivers responding on almost any frequency.

So versatile is Mobot, Hughes spokesmen claim it can operate an engine lathe, and can perform other machining tasks.

RECORD PRODUCTION RATE — optimum quality control

Completely integrated production and special fabricating equipment . . .

A RECORD PRODUCTION RATE and optimum quality control has been achieved by Independent Metal Products Co. of Fresno, Calif., by means of completely integrated production and custom-designed aluminum fabricating equipment.

The Fresno plant turns out precision-built trailers, including tanks of all types, cement and aggregate hoppers and specialty units. The company is a division of Fruehauf Trailer Co.

Here are some of the novel techniques used:

Aluminum sheets and plates are stored under controlled atmospheric conditions to eliminate the possibility of moisture forming between the sheets and causing "spotting" or water-marking. Steel sheets are stored indoors to prevent rusting.

The palletized sheets are taken to the start of the production line by fork lifts. The plant uses a line-type of production common in the automotive industry.

Each individual piece is produced to exact tolerances from a template or pre-cut pattern. The bulk of the cutting of special shapes for components is done on semiautomatic machines.

Making a major contribution to the total production capacity of the plant (as well as quality control) are its time-saving and cost-cutting welding processes.

Fully automatic seamers are used to weld the individual sections of the trailer bodies, which have been rolled to exact specifications on a plate-bending roll. The body shells are then sent to the station where the baffles and bulkheads are spot-welded at pre-set points inside the shell.

For finish-welding of the bulkheads and ends of the trailers, the plant designed and built a special "up-ender" welding positioner. The purpose of this fixture is to properly position the tank for optimum quality control. This hydraulic-operated fixture hoists the body shell into an upright position.

A hydraulic lift platform, equipped with automatic controls, allows the welder to move up and down the body of the trailer and enter through man-holes on top of the body to secure the heads or ends as well as to complete final welding of the interior bulkheads

and baffles. After the interior welding of the tank has been completed, an overhead 5-ton traveling crane places the tank in special mobile welding positioners designed and built by the company. Approximating a mobile vise, the positioners consist of two identical yet independent holders which position the body securely and rotate it to provide easy access to any part of the body. In these rotating positions the various sub-assemblies are attached to the tank.

After sub-assembly welding, the bodies, still held by the mobile positioners, are rolled to succeeding substations for wheel mounting, electrical system installation, discharge piping and various other accessories.

Among other special equipment built by the plant is a custom-built die mounted on a standard punch press which punches and flanges the baffle holes for interior baffles of the tank trailers in a single operation. The bulkheads and baffles used by the plant are produced by Independent Metal Products on special tooling designed to form the parts to exacting tolerances.

Completed trailers are then taken by tow truck to the paint building adjacent to the main plant. Here they enter the paint spray booth equipped with a recirculating paint spray system. Paint is mixed and pressurized outside the booth itself and piped in. Temperature inside the booth is controlled for proper application and air inside the booth is changed three times every minute by means of large blowers and suction fans which remove fumes and prevent overspray.

Trailers are then rolled into a bake oven where the paint is cured by circulating forced air at 225 deg. F.

The entire plant of the Independent Metal Products in Fresno is manifolded for compressed air, Argon gas for welding (aluminum can be welded only in an atmosphere of inert gas) and a recirculating water system for cooling the welding equipment.

Although the bulk of the plant's current production is in aluminum bulk trailers, fabricating is also done in stainless steel and high-tensile steels.



Photo Courtesy Simon Holland and Son Company, Inc., Brooklyn, N. Y.

FOR EVERY APPLICATION, THERE'S ONE CRANE OUTSTANDING...

IN METAL FABRICATION: Low-cost, 5-speed, standard-built P&H cranes provide quick, economical handling of a variety of steel shapes in this eastern fabrication shop. This 7½ ton unit has a 55 foot span, but by using I-beam construction, it furnishes fast thru-the-air steel handling with a minimum of dead weight imposed on the runway. This means that the inexpensive first cost is matched with low maintenance costs.

Built with all the care and craftsmanship found in every P&H crane, these units are heavyweights in performance, lightweight only in price, and are backed with the famous P&H guarantee of undivided responsibility on all structural, mechanical, and electrical parts. Only P&H gives you this assurance. Read the details in Bulletin C-51. Write for your free copy to Dept. 104, Harnischfeger Corp., Milwaukee 46, Wisconsin.



HARNISCHFEGER
...quality and service for 75 years





Photo Courtesy Waukesha Motor Company

...ON A
DIME,
GENTLY!

WHEN CLOSE SPOTTING IS THE NEED, P&H ZIP-LIFT IS THE STANDARD.

P&H Zip-Lift hoists excel in their ability to spot delicate loads on a dime, quickly—but gently. That's why you'll find Zip-Lifts aplenty... hanging over every vital lifting area... in this engine manufacturer's plant.

Why Zip-Lift?

First: Zip-Lift is *close-spotting*. Precision spotting of even awkward loads is done with the touch of a button. One hand control operation leaves other hand free to guide the load right to the spot.

Second: Zip-Lift *always works*. Its consistent dependability has been proven in tens of thousands of applications and under the toughest working conditions.

Third: Zip-Lift is *safe*. Workers are protected by a complete line of safety features including dual brakes, shrouded load block, low 24 volt control, and two limit switches that protect worker, load and hoist.

Best of all, Zip-Lift is *priced right*—at no sacrifice of quality.

The complete story on Zip-Lift is yours for the asking in Bulletin H-20. Write Dept. 204, Harnischfeger Corporation, Milwaukee 46, Wisconsin.



P&H HARNISCHFEGER
...quality and service for 75 years

WASTE and SCRAP disposal methods

Economic factors—new regulations—dictate improved systems of waste and scrap disposal. Here are what leading Western plants are doing . . .

YOU MIGHT BE DUMPING MONEY down the drain if you're using an antiquated waste and scrap disposal system.

Yes, no longer can this be considered an irksome chore performed with crude equipment. Recent social and economic changes have made Western plant operators wake up to these facts:

(1) The stepped up pace of production piles up waste and scrap until it threatens to choke operations;

(2) smog regulations have made obsolete many old ways of disposing of rubbish (especially burning in incinerators);

(3) scrap and waste — properly handled — can bring profits never before realized.

Many progressive Western plant operators have met these challenges with advanced systems of waste and scrap disposal. WESTERN INDUSTRY editors have talked with these men, visited their plants, and have noted some of the modern techniques used.

Here is the equipment used and what it does:

CONVEYORS, HOISTS, etc.

Conveyors not only save men and equipment, they can be adapted to any scrap problem—whether horizontal, vertical or inclined movement is involved. And all kinds of conveyors are available to do the job.

For example, General Electric Co., Los Angeles, uses a Link-Belt Flexmount oscillating conveyor operating under the floor to carry away punchings from punch presses and triangular shaped pieces of scrap from blanking presses. The conveyor carries the scrap to an automatic skip hoist which discharges it into a tote box located outside the building.

The Allwork Co. in Oakland, Calif., uses a Mathews Conveyor Co. belt running alongside presses to deliver scrap to a box at the end of the line. And the Anchor Hocking Glass Corp. in San Leandro, Calif., feeds glass back into furnace on a Rapistan conveyor.

Cranes used in can salvaging . . .

Cranes figure prominently in a can salvaging operation at the Los Angeles By-Products Co. plant. This firm salvages cans delivered to the plant by the City of Los Angeles rubbish trucks. The cans are dumped into any of six very deep hoppers by tipping the truck containers with cranes.

There are four of these 6,000-lb. cranes (Cleveland Tramrail) on the runway. These are divided into two pairs and each pair is tied together to form a unit. One unit is required for emptying a container. Since most of the semi-trailers used for this service have two containers, the crane units can empty simultaneously.

The bridge travel and hoist of all four cranes are motorized and push-button controlled. Carriers are hand-propelled in order that they may move in accordance with the pull of the load. The hoist limit switches are set to stop the hoists when the containers are tipped the maximum allowable.

Hoists in a waste disposal system . . .

McCulloch Motors, Inglewood, Calif., is using hoists in a waste disposal operation. Here's how the system operates:

Hand and motorized carts pick up shavings from machines in various parts of the plant. Carts are taken to a central dock area equipped with a series of scrap bins built into the dock.

The scrap bins are fitted with fulcrum arms attached to each side and to the dock. Over each bin is constructed a short span, push type single girder bridge crane suspended from an I-beam.

On each bridge girder is a Budgit (Manning, Maxwell & Moore, Inc.) electric hoist and trolley. The hoist hook is attached to the scrap bin. As the hoist raises the scrap bin approximately eight ft., the fulcrum arms on the side of the bin cause it to dump into waiting trucks. As the hoist is lowered the scrap bin is returned to its rest position on the dock.



TRUCKS and ATTACHMENTS

Containerization of waste and scrap . . .

Costly waste disposal methods are being eliminated in plants in the San Jose, Calif., area by means of "containerization."

With this method, scrap is emptied into large containers placed in the plant area. At regular intervals these containers are picked up by a Dempster Dumpmaster which hoists up the container, automatically dumps it, compacts the waste hydraulically, and returns the container to its original spot.

The beauty of the system is that it can be done by a firm having its own Dumpmaster unit, or by having a contractor do the job.

Many firms—large and small—in the San Jose area are enjoying savings of around 50% by having their waste disposed of by a contractor who owns the latest Dempster Dumpmaster units.

The contractor—Vic Corsiglia, who is president of the Garden City Disposal Service, Inc.—serves plants like CPC Pickle (one of the largest plants of its kind in the United States), Food Machinery and Chemical Corp., Gaines Poultry Products, W. P. Fuller Co. and others.

Mr. Corsiglia has the latest Dempster Dumpmasters—24- and 30-cubic yd. vehicles. Here's how the system operates:

He supplies plants with 1- to 6-cubic yd. containers, depending upon need. The containers can be placed anywhere in the plant and can be supplied with casters for easy moving. The companies using them fill the containers from the top until they are full.

Then, at regular intervals, the Dumpmaster is sent to the plant. The unit, which is a large van-like truck with a pair of lifting arms extending out from the cab, approaches the container. Lifting arms engage the container channels and, from controls inside the truck cab, the driver lifts the container and dumps it automatically into the truck. The empty container is returned to its original spot and the arms disengaged.

The refuse, now in the truck body, is compacted hydraulically. By this method, some 90 cubic yards of loose material can be compacted into the 24-cubic yd. vehicle. The contractor then transports the compacted load to a dump where it is ejected hydraulically.

Another type of Dempster unit, the "Dinosaur," is

THERE ARE MANY WAYS to get rid of waste paper and baling wire. In this case a torque-flow pump sends it through a re-pulper. See story.

being used by Cal-State Metals, Gardena, Calif., where the trucks are equipped with radio telephones. Containers are provided to plants and located at convenient areas. When full, the truck comes along and picks up the container, replacing it with a new one.

Specially designed rubbish trucks . . .

Plants like the Crown Zellerbach Corp. plant at Antioch, Calif., are faced with large quantities of bulk scrap daily. To handle this mass, the company has some 40 specially designed rubbish trucks stationed around the plant.

The trucks, built by The Colson Equipment & Supply Co. in Oakland, are all steel units, 90 in. long, 45 in. wide, and 45 in. high. The trucks have two swinging doors in front that open up like a cupboard. The trucks can be wheeled easily into place as they are mounted on two rigid and two swivel casters with 8-in. dia. plastic wheels.

As scrap and waste is dumped into the trucks, they can be picked up with a fork lift and whisked to a dump area. Arrangements can be made to provide the trucks with towing gear so they can be towed in tandem to dumping areas.

Tractor shovels for clay mix . . .

The Denver, Colo., Brick and Pipe Co. used to use a crawler-type loader to feed clay mix into hoppers. But these have been replaced with rubber tired "Pay-loaders" (Frank G. Hough Co.) because of the following advantages noted by the company:

1. *Faster operation* — the old machine couldn't keep up and needed help continuously. Now all work is done in half the former time.
2. *No overtime* — the old unit always worked hours after others had quit to clean up job and get ready for next day.
2. *Work areas cleaner* — the track model stirred up clouds of dust, while the rubber-tired unit did not.

4. *Easier operating*—the Model HO is easier to run, comfortable, and always ahead of work.

The Sonkin Galamba Corp. aluminum smelter in Gardena, Calif., also uses a "Payloader" to handle jumbled, odd-sized and unwieldy hunks of scrap. The vehicle has a ram scrap grab rack for loading scrap into baling hoppers. The scrap hoppers are charged in three passes by the "Payloader."

New method for ferrous, non-ferrous scrap

Day and Night Mfg. Co., Los Angeles, is one of the first Western firms to use a new method of disposing of ferrous and non-ferrous scrap.

The new method uses a single truck with detachable steel container. Instead of the customary trailer, usually parked outside, the container is dropped off at any desired location within or outside the plant.

Here are some of the advantages of this equipment, manufactured by Borg-Warner Corp., and—in this case—operated by Lipsett Steel Products, Inc.

1. Since the box has a "walk-in" loading feature, in-plant man hours and crane time are reduced to a minimum. Old type trailers have stationary sides, making it necessary to hoist all scrap. With the improved arrangement, a certain amount of in-plant handling equipment is rendered unnecessary.

2. The boxes are only 17 ft., 4 in. long, as contrasted with the present trailer length of 30 ft. Being only slightly more than half as long as the trailers, the boxes take up less room in the plant or outside area. But the containers, by their unique construction, hold the same tonnage as the equipment they are replacing.

3. The containers promise better control of segregated material, especially non-ferrous. The ordinary truck trailer has a capacity of 30 cubic yds., but the Lipsett boxes will be of various sizes (10, 20, and 30 cu. yds.) according to need.

Cost studies have indicated that a saving of 32% can be made by handling scrap this way.

HYDRAULIC SCRAP HANDLER ATTACHMENT (Yale & Towne Mfg. Co.) used in Western plants has a 1200-lb. capacity and a seven ft. high dumping clearance.

Revolving carriages on fork lifts . . .

Parker Aircraft Co., Los Angeles, is using a model 540 Towmotor truck with a 168-in. lift and a 360-deg. revolving carriage for handling waste boxes.

Rotation of heavy loads in a full 360-deg. circle in either direction is provided by a hydraulic motor coupled to the spindle of the revolving carriage by a chain drive.

Speed and direction of rotation is achieved through a hydraulic valve on the control panel. A container on the forks can be turned 180 deg. for complete dumping in approximately eight seconds.

Using low lift pallet and platform trucks . . .

Low lift pallet and platform trucks are used at Terminal Refrigerating Co., Los Angeles, for moving boxes of trimmings, etc., from machines to central disposal areas.

The firm has found that untrained janitors can use them, as there is no driving involved as in the case of fork lift trucks.

The trucks in use at Terminal Refrigerating Co. have a skid adapter attachment that permits handling both pallets and skids with the same truck. The trucks are manufactured by the Moto-Truc Co.

BALERS, HOPPERS, etc.

Green Stamps and classified documents have this in common—they both must be destroyed completely. And that's why they both use the same method of disposal.

At the Green Stamp Redemption Center in Los Angeles, a Somat waste disposal system chews into pulp about 35,000 canceled books in one-half day. The unit then compacts the pulp and discharges it to haul-away containers.

A similar feat is performed at the El Segundo, Calif., plant of Douglas Aircraft Co. Here, classified documents and blueprints alike are chewed by the Somat unit which then feeds the waste into a hydra-extractor which expresses water and discharges the semi-dry pulp into waiting containers.

The Somat units are made by the Wandel Machine Co., Inc., Pomeroy, Pa.

Integrated disposal with a baler . . .

Here's an integrated waste disposal system that ends with an electric baler.

The system is operating at the Moore Business Forms, Inc., Pacific Div., in Oakland, Calif. This firm manufactures business forms, which present special scrap problems. For instance, when perforations or holes are punched into the forms, the scrap has to be picked up immediately.

This is accomplished by Buffalo Forge Co. blowers attached onto the presses. The blowers suck up the scrap as soon as it is made, and blow it into burlap bags.

On paper trimming machines, a 15-hp. motor supplies the vacuum which sucks up the trim as it rolls from the paper. A suction tube is placed right above the trimmer. The scrap trim is sucked up through a





LEADING WESTERN PLANTS are using this Floormobile vacuum unit to pick up dirt and dust and to reclaim valuable materials.

network of tubes to the blower which has a special cutting blade. As the paper trim strips meet the blade they are chewed up into smaller particles which are then blown into a vast storage bin.

Next to this storage bin is an electric baler. This baler, made by the Economy Baler Co., Ann Arbor, Mich., is an upstroke type with a 16-ft. active filling chamber. It makes bales of approximately 750 lb.

The baler is loaded from the front door which opens up toward the storage bin. Scrap is then racked directly into the baler. Other scrap is brought to the baler by rubbish trucks that have been located throughout the plant.

The trash is usually carefully sorted and weighed so a bale of a particular specification can be made up. When the filling chamber is loaded, the operator merely presses a button and the multiple compression upstroke compresses the mass. Then more material is put in, compressed, until a bale is formed. The operator puts baling wire around the finished bundle and ejects it onto a scale.

Lee Rumph, plant manager, estimates that over 7 times as much scrap can be compressed with this new baler. And it saves at least one man over the old, top loading baler.

Wire salvaging machine ups scrap prices . . .

A wire salvaging machine, developed by Russ Carr, materials expeditor at the Arizona Public Service Co., Phoenix, Ariz., is upping the price received for scrap aluminum wire $2\frac{1}{4}$ times and copper wire 25%.

The machine strips neoprene covering from the wire, chops it into desired lengths, and separates foreign metals from the aluminum or copper.

Magnets pull out the steel components that had helped strengthen the wire, so that only pure metal comes out. This pure and stripped scrap can then command a high price.

VACUUM UNITS

Central vacuum cleaning systems . . .

Leading plants in the Los Angeles area (including B. F. Goodrich, American Can, Westinghouse, Bethlehem Pacific and others) are using a central vacuum cleaning system that picks up small particles by means of a flexible hose and attachments, and passes them through a stationary piping system to one or more collector-separator tanks. An integral exhaustor and motor unit provide the required vacuum.

Besides regular dust problems, the units (Lamson Exidust Systems) can recover valuable spilled material such as filings and chips, color pigments, TNT, tetryl and others.

Disposing of sawdust in woodworking . . .

Rankin Bros., Los Angeles, is using a special vacuum machine to dispose of sawdust in its woodworking machines.

The vacuum, manufactured by the Clements Mfg. Co., is portable and works on a principle similar to a regular vacuum cleaner. It has two-speed power and can be used either as a blower or suction machine.

Floor cleaning time cut in half . . .

A floor area of 250,000 sq. ft. can be cleaned in $3\frac{1}{4}$ hr. per shift at the Scott Paper Co.

Richard Graham, factory service manager, reports that the plant has four floors, each with approximately 60,000 sq. ft. of space.

Trying to keep that much floor clean required the full time of two men with 36-in. push brooms on each of three 8-hr. shifts. But even with the best efforts, results were never satisfactory.

Now with a Floormobile vacuum, manufactured by Handling Devices Co., Inc., and distributed by Easterday Supply Co., the job can be done in half the time and quality control problems are simplified.

PUMPS

Like most pulp and paper plants, the Puget Sound Pulp and Paper Co., Tacoma, Wash., had a tough disposal problem. What was needed was a pump that could handle 500 gpm. of 5% stock at 50 ft. total dynamic head.

Material to be re-pulped was brought to the beaters by lift truck and conveyor belt. After passing through the pulper the pulp flows to a surge tank. The pump then had to pump it from this tank through a settling tank, where foreign material was to be removed.

The added problem was that the mixture consisted of paper scrap and even bits of baling wire. There was no way to remove all the junk before it reached the pump.

A conventional centrifugal pump was tried but it usually ended up in the repair shop every two weeks. And it clogged about every day.

Finally a Western Machinery Co. torque-flow pump was tried. And because of the recessed impeller which provides a clear, unobstructed passage from intake to discharge, no clogging occurred.



WESTERN BUYER'S DIRECTORY

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Overhead material handling equipment.

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Colo., Denver—J. H. Dorough Co., 1357 Harlan St. BE 7-2925
Ore., Portland—McMahon Bros., Inc., 921 S. W. Oak St. CA 8-6878
Utah, Salt Lake City—Modern Equipment Co., 52 West 2nd St. S. DA 2-5887
Wash., Seattle—F. T. Crowe & Co., Inc., 329 Second Ave. W. AT 4-8484

AUTOMATIC TRANSPORTATION CO., Chicago 20, Ill.

Over 200 models of electric-driven industrial trucks; Operator led Transporters, Dockers, Dynamotives and Skylift cranes; Fork, ram and platform trucks; Non-powered hand trucks.

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Calif., Stockton—Western Lift Trucks, 343 W. Weber Ave.
Colo., Denver—Materials Handling Equip. Co., 1795 Sheridan St.
Hawaii, Honolulu—Commercial Equipment Co. of Hawaii, Box 891
New Mex., Albuquerque—Charles G. Davis, 3529 Mont Vista Blvd. N. E.
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BAKER INDUSTRIAL TRUCKS, a Division of Otis Elevator Co., Cleveland 2, Ohio
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Calif., Oakland—Thomas A. Short Co., 3430 Wood St. OL 5-6557
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Ore., Portland—F. E. Bennett Co., 426 N. W. 6th Ave. CA 8-2321
Utah, Salt Lake City—Arnold Machinery Co., P. O. Box 2220. DA 2-5631
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Wash., Spokane—Standard Equipment Co., E. 2725 Sprague Ave. KE 5-2014

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Fans, Heating, Ventilating, Air Conditioning Equipment, Machine tools and pumps.

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Bulk material handling equipment; Sewage, water and industrial waste treatment equipment.

Branches

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Calif., Oakland—E. C. Buehrer Assoc., Inc., 253 Fourth St. TE 6-2082
Colo., Denver—L. J. Sinow, Box 4033. AL 5-7245
Ida., Boise—Idaho Chemical Industries, Inc., P.O. Box 2641. Phone 4-2431
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Colo., Denver—Materials Handling Equipment Co., 1795 Sheridan Blvd.
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Wash., Seattle—Russell G. Daley, Lake City Station, P.O. Box 1655

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Pallet racks, Drive-in racks, Cantilever racks, Palletless racks, Decking.

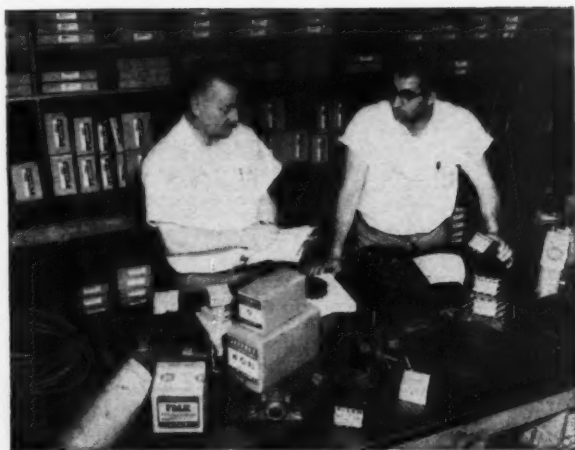
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Colo., Denver—Murray Equipment Co., 16 Wazee Market. KE 4-5296
Ore., Portland—Air Mac Inc. of Portland, 2727 S.E. Union Ave. BE 4-0511
Wash., Seattle—Air Mac Inc. of Seattle, 3838 4th Ave. S. MU 2-3388
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That's why a Jeffrey distributor can be an invaluable member of your supply team. He offers genuine Jeffrey parts for materials handling and power transmission equipment...engineered for dependable service and designed for specific jobs...



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MARVIN E. WHITEMAN (right), President of Whiteman Enterprises of Los Angeles, says:

"Our insurance program with Industrial Indemnity is just one of the many factors which have helped us become the nation's leading manufacturer of portable concrete construction equipment. But it's a mighty important factor to us. Marv, Jr., (left) and I believe in on-the-job safety. We know what it can do to reduce operating and insurance costs, to say nothing of the morale boost it gives our men. And safety engineering is just one part of Industrial's quality insurance service. Our agent, Hal Wright, of Glendale, really became 'Mr. Insurance' to us when he recommended Industrial for our workmen's compensation and liability coverages."

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WESTERN INDUSTRY/OCTOBER 1959



NEW MONARCH DEVELOPMENTS **STOP** PREMATURE RIM SEPARATION!



MONARCH SOLIDS FEATURE NEW COMPOUND AND BONDING PROCESS ... REDUCE REPLACEMENT COSTS

Three common causes of premature solid tire failure are embedded metal scrap, chemicals and excessive heat. Each attacks and destroys the bond between tire and rim. Result: rim separation, severe tire damage, high replacement costs.

MONARCH engineers have solved this problem by combining a new, extra tough, natural rubber stock, Compound T-5100, with an advanced rubber-to-metal chemical bonding process. Extensive field tests have proven that *MONARCH tires now feature unprecedented resistance to rim separation caused by the above factors.*

That's another reason why dollar-conscious buyers specify MONARCH industrial solids to cut replacement costs.

FOR ADDITIONAL INFORMATION ... write direct or see your nearest Monarch dealer.



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SPECIAL MANUALS

FOR YOUR FREE COPY, CIRCLE APPROPRIATE KEY NUMBERS ON POSTCARD, p. 73

WASTE and SCRAP DISPOSAL

Field reports, condensed guide on waste handling

Fact-packed field reports show how lift trucks and attachments have helped firms like Convair, Hiller Helicopter, and Pasadena City College solve their waste and scrap disposal problems. The problem is cited, the solution carefully spelled out, and the time and money saving advantages show the effectiveness of the equipment. There is also a condensed guide on other industrial trucks and attachments that can be used for waste and scrap disposal. *Hyster Co.*

... FOR YOUR COPY, CIRCLE NO. 150

All types and capacities of portable industrial cleaners

Looking for a portable industrial cleaner? You'll find both floor and shoulder-strap portable cleaners in this combined catalog. There are all shapes and sizes of attachments on these cleaners. The units can be used as blower-suction cleaners, hot or cold air blowers, furnace blowers and ordinary industrial vacuums. All parts are pictured and thoroughly described. *Clements Mfg. Co.*

... FOR YOUR COPY, CIRCLE NO. 151

Single suction pump data, selection tables

If a close-coupled, single suction pump will solve your waste disposal problem, then you'll find what you're looking for in this 22-page manual. Starting out with a schematic drawing of the pump, the manual then presents several pages of ratings and other specifications to help select a pump for your needs. *Buffalo Pumps Div. of Buffalo Forge Co.*

... FOR YOUR COPY, CIRCLE NO. 152

Industrial truck selector guide

There are over 150 models of industrial trucks in this 20-page handbook. And they can easily handle your waste and scrap disposal problems. Selection factors such as capacity, frequency of use, power source and use of semi-standard or special trucks are given as a ready reference to all trucks listed. Diagrams and tables spell out other points. *Automatic Transportation Co.*

... FOR YOUR COPY, CIRCLE NO. 153

Engineering data on torque-flow pumps

The torque-flow, non-clog pumps detailed in this six-page foldout can be used for all industrial processing, waste handling and sewage applications. And they can be applied

in vertical or horizontal arrangements. The folder includes selection charts for all models, as well as operational details. *Western Machinery Co.*

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Bulletins on all types of industrial trucks

Industrial trucks in all capacities are detailed in these bulletins. All types of power plants are available, including LP-Gas, gasoline and electric. Also, these trucks have special features such as fork construction, height, maneuverability that make them especially adaptable to all industrial applications—including waste and scrap disposal. *Baker Industrial Trucks, a Division of Otis Elevator Co.*

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Condensed catalog on powered materials handling

Gas, electric and diesel-powered industrial trucks are pictured and completely described in this 16-page manual. Specifications are set down in table form so you can pick out the facts quickly. A special section on attachments and devices will show you how a properly equipped truck can be adapted to your waste and scrap disposal problems. *Clark Equipment Co.*

... FOR YOUR COPY, CIRCLE NO. 156

52 pages on cost-cutting with monorail and cranes

Overhead monorail and cranes can play important roles in your waste and scrap disposal system. This 52-page booklet (just off the press) uses actual installation photos and captions to give you hundreds of ideas on using this material handling equipment. *Louden Machinery Co.*

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Invert-A-Bin semi-bulk handling system

One of the newest devices in waste and scrap handling is this Invert-a-bin semi bulk handling system. As described in a series of folders and fact sheets, the system consists of various sizes of containers, internally cone shaped for easy emptying and fitted with a trunnion tube for inverting. It can be handled by all types of material handling equipment. *The Powell Pressed Steel Co.*

... FOR YOUR COPY, CIRCLE NO. 158

64 pages on water, sewage and industrial waste

This complete manual lists all types of equipment you'll need for industrial waste treatment. Sections deal with screens, grinders, grit collectors, skimmers, feeders, chemicals, handling equipment, conveyors, power transmission equipment. Large photos and diagrams help tell the story. *The Jeffrey Manufacturing Co.*

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Which material
is best
for your job.

ALUMINUM TUBING or ALUMINUM PIPE?

Let **PERRY KILSBY** help make the proper choice
for greatest economy and best job application!

Ever stop to wonder just what's the difference between aluminum tube and pipe and how a choice between the two would affect your cost picture? Let's take a quick look:

ALUMINUM TUBING is sold by the pound. Because tubing is made in a tremendously wide range of diameters and wall thicknesses you can select a size very close to finished part requirements. This means good economy because machining waste is minimized. Tolerances, too, are closer in tubing, therefore only small allowances are needed for cleaning up. Because of the large inventory of stock sizes available, tubing can be considered to be manufactured virtually to customer requirements. Alloys in stock: 2024-T3, 7075-T6, 6061-T6, 3003-H14 or O, 6063-T6.

ALUMINUM PIPE is sold by the foot. Schedule 40 and Schedule 80 aluminum pipe is stocked in three basic alloys: 3003-H112, 6063-T6, 6061-T6. Although we have aluminum pipe sizes in inventory starting as small as $\frac{3}{4}$ " O.D. and extending to 12" O.D. and larger, a more restricted list of pipe sizes is manufactured by the mill than is available in tubing. Since most parts fabricated from pipe are not machined they should be designed around available mill sizes. Tolerances, of course, are wider in all aluminum pipe than in tubing.

If you're in doubt about which to use, let our metallurgical engineers recommend the best aluminum alloy for your specific requirements—in TUBING or PIPE, extruded (Holobar) or drawn!

Ask for free Perry Kilsby
Stock List—issued quarterly,
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new sizes of all tubing
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Load-Lugger detachable container system

Problem-solving case studies in waste and scrap disposal are presented in this folder. Pictures show the applications of this truck-detachable container system and you'll find out the time and cost saving advantages. You can be sure that the solution to your problem will be included. *Ingersoll-Kalamazoo Div., Borg-Warner Corp.*

... FOR YOUR COPY, CIRCLE NO. 160

Drastic cutting of industrial waste costs

The hidden as well as the known costs of waste disposal are analyzed in this 12-page booklet. Then time and money solutions are given. Solutions center around a unit that takes in all kinds of refuse—grinds it into compacted pulp—then discharges it to haul-away containers. A step-by-step photo-diagram shows every step of the operation. *Wandel Machine Co.*

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All about gravity and power conveyors

This 24-page handbook is loaded with specification and application data on gravity and power conveyors. Pictures and diagrams show how actual installations are saving time and money in plants of all types. With the accessories listed, these conveyors would be ideal for your waste and scrap disposal system. *Standard Conveyor Co.*

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From carton crushers to elevated conveyors

The complete sequence from carton crushing to disposing is pictured and explained in a series of bulletins. Field reports then take you into a typical plant, explain the problem and its solutions. Units are thoroughly explained and pictured so you can see how they can work for you. *The Rapids-Standard Co., Inc.*

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Tractor shovels for waste, scrap disposal

Tractor shovels are mighty versatile—and they can easily be adapted to your waste and scrap disposal system. This eight-page booklet illustrates many of the inside and outside uses of tractor shovels. Complete application data is given so you can see how they can fit into your operations. *The Frank G. Hough Co.*

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Hydraulic and mechanical scoops for bulk handling

Attachments add greater versatility to fork truck operation and often allow one truck to triple its overall efficiency. This fact sheet gives you the specifications and applications of a hydraulic dump bucket scoop and a mechanical dump bucket scoop. Both are ideal for handling waste and scrap. *Lewis-Shepard Co.*

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Scrap handler attachment for tractor shovel

Specification and application data are available on a 1200 lb. capacity hydraulic scrap handler attachment capable of dumping at a height of seven feet. High capacity of the claw-like unit permits handling large loads of lathe turnings, light gage blanking scraps, bales, hides, strips or other objects that do not easily conform to normal bucket type handling. *The Yale & Towne Mfg. Co.*

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Drum lift attachment increases elevator versatility

You can get all the facts on a new automatic drum grab device that increases the versatility of hydraulic elevators. The device is for engaging, transporting, placing and tiering drums. It is available on the Barrett 750-lb. foot or battery-operated, hydraulic elevator. Complete specifications and applications are included. *Barrett-Cravens Co.*

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Complete industrial waste treatment equipment

This eight-pager contains sections on removal of solids by screening . . . removal of grit from liquids . . . sludge removal . . . skimming equipment . . . chemical treatment . . . and on many other types of industrial waste treatment equipment. Units are completely pictured and described. *Chain Belt Co.*

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70 pages on conveyor chains for waste, scrap disposal

Complete engineering and application data on conveyor chains for waste and scrap removal are contained in this fact-packed handbook. Large photos, engineering drawings, and specification sheets help spell out the uses of this equipment. A special section covers the most intricate technical aspects of chain conveyors. *Mechanical Handling Systems, Inc.*

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Special bulletins on power sweepers

Colorful and informative bulletins give you the facts on power sweepers of all capacities. A wide range of attachments is available to collect dust and other material that lodges in difficult-to-get-at places. *Wayne Manufacturing Co.*

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Pumps to handle all types of waste material

You'll find a wide variety of pumps listed in these catalogs to solve your waste disposal problems. Of special interest are non-clog pumps of the wet and dry pit variety. If these don't supply the answers to your problems, there is a bulletin on a non-clog sewage ejector pump. Schematic drawings and cut-away photos let you see how the pumps can work for you. *Pacific Pumping Co.*

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Fiberglass Stack-n-Nest tote pans

This brochure details lightweight but strong tote pans that can be used in a wide variety of waste and scrap operations. They save space and are easy to handle as they stack and nest. Also, they can withstand most corrosive elements, temperature extremes and other abuses. This brochure gives you all specifications and a whole picture-page of suggested applications. *G. B. Lewis Co.*

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Saving time and money with power sweepers

A series of booklets presents the facts on industrial power sweepers that can do in one hour the work requiring 15 to 40 men with brooms. All sizes and capacities are available with a wide range of attachments. Together they can pick up just about any type of waste or scrap inside or outside your plant. Outstanding operating features are pictured. *Wilshire Power Sweeper Co.*

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INTERCHANGEABLE PARTS can be relocated in minutes for floor, wall, or ceiling mounting.

FOUR-BEARING DESIGN eliminates overhung discs, equalizes belt loading, and extends life.

INDIVIDUAL VENTILATION of motor and belt housings reduces operating temperatures, increases efficiency.

SINGLE-COG BELTS, with extra contact area, improve efficiency and extend belt life.

TACHOMETER GENERATOR, mounted on output shaft, operates indicator installed at a remote location.

Four of many variations of mounting possible from basic ALLISPEDE design.

ELECTRICAL REMOTE CONTROL can be provided by an enclosed speed-adjusting motor, mounted on the belt-changing mechanism.

BELT CHANGING is fast and easy — does not affect permanent alignment of discs or belts.

Let's look at the features of the ALLISPEDE* Drive

New Louis Allis drive offers accurate control—maximum belt life—long-run economy—low-cost versatility—ease of installation

Here's a drive so easily adaptable to changing physical and operating needs that it obsoletes obsolescence. You can relocate components — add or remove attachments and controls — in the field, in minutes.

Its *all-new* design improves performance and efficiency. Inspection, servicing, and belt-changing are a snap. Furthermore, maintenance is almost nil.

As for versatility — there's an Allispede to meet whatever mechanical drive requirement you have. Sizes up to 30 hp, output speeds from 1 to 10,000 rpm, and speed ranges up to 8:1. Motors can be

open, drip-proof, enclosed, or explosion-proof—with ventilated or enclosed belt housings — for foot, P-base, C- or D-flange mounting on your machine.

Allispede is available with parallel shaft, or right-angle, integral speed reducers; special shaft extensions; integral magnetic brakes; electrical or mechanical remote control, and other modifications.

Interested? Contact your nearby Louis Allis District Office or write to The Louis Allis Co., 438 East Stewart Street, Milwaukee 1, Wisconsin, for a copy of Bulletin 3600.

*Allispede is a trademark of The Louis Allis Company.

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MANUFACTURER OF ELECTRIC MOTORS AND ADJUSTABLE SPEED DRIVES
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ASD-133

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SAFETY PRODUCTS

Safety guards, controls for punch presses

How safe are your punch presses? They'd be safer if they had the guards (single, double sweep . . . basket, etc.) and the electro-solenoid and two hand controls described in these bulletins. Pictures show you actual applications and each safety device is thoroughly described so you can see how they will work for you. *Searjeant Metal Products, Inc.*
 . . . FOR YOUR COPY, CIRCLE NO. 174

Safety engineering equipment catalog and manual

This is a practical working guide to safe handling and application of flammable liquids in production and maintenance operations. It gives a clear outline of the problems involved in the use of flammables in individual processes, and describes methods and equipment required for safe control throughout the operation. *The Protectoseal Co.*
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Safety equipment for welding, etc.

There are hundreds of safety items pictured and described in this 30-page manual. Items include helmets, hand shields, electrode holders, safety hats and caps, screen helmets, face shields, headrest goggles, safety glass, connectors, chipping hammers. These items are made of

super-strong material for complete safety. *Fibre-Metal Products Co.*
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A real "sound" investment in noise control

This folder explains how ear-valves (not plugs) can shut out harmful, nerve-shattering noise. A cut-away diagram reveals a watch-like mechanism that regulates and controls the passage of sound—stopping harmful noise but allowing the passage of normal sounds, orders, etc. A simple 30-second test described in the folder will prove the merit of these ear valves. *Sigma Engineering Co.*
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Cup wheels with built-in guard

Built-in guard safety cup wheels for portable grinding in steel mills, foundries and welding shops are the subject of this folder. How the safety cup wheels are made . . . their advanced features . . . specifications and recommendations are contained in this 5-hole punched folder. *The Carborundum Co.*
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Industrial gloves and protective apparel

Industrial safety gloves made of all types of material—to resist all types of harmful elements—are pictured and described in a series of bulletins. Also, a variety of grips are available to assure effective work under all conditions. In addition, you can find out about industrial aprons and other protective apparel for chin-to-toes protection. *The Surety Rubber Co.*
 . . . FOR YOUR COPY, CIRCLE NO. 179



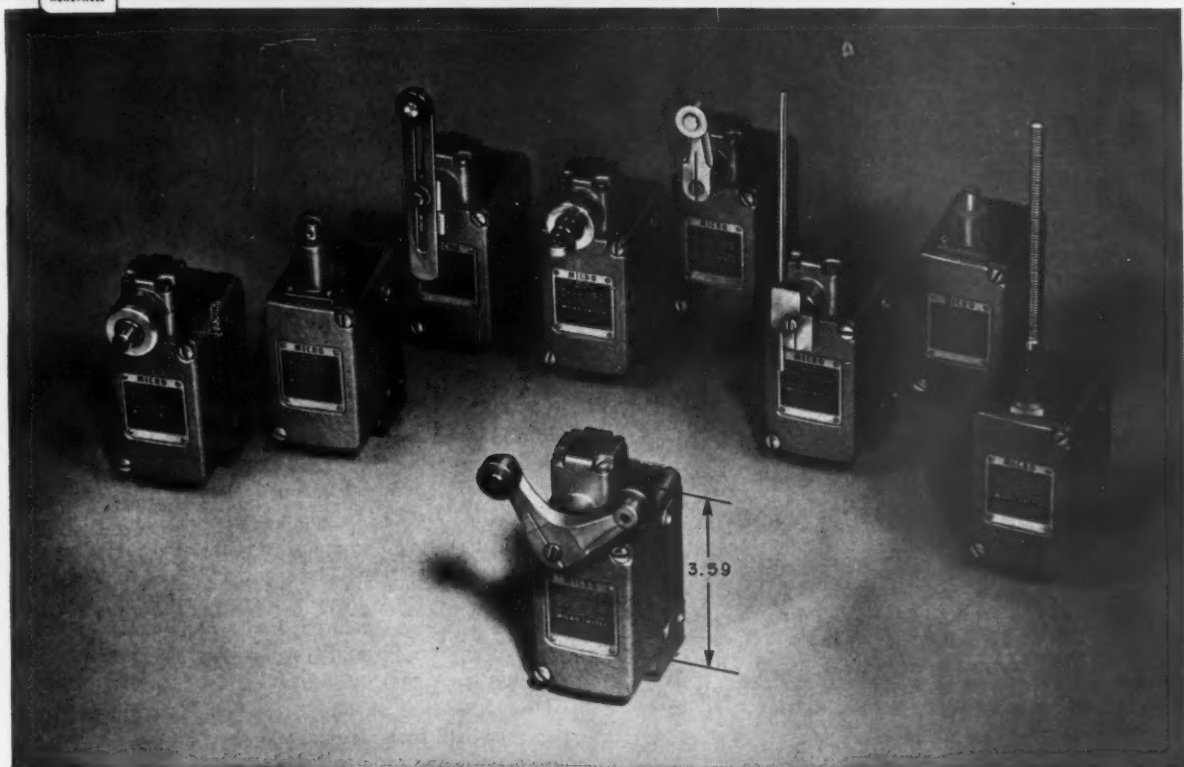
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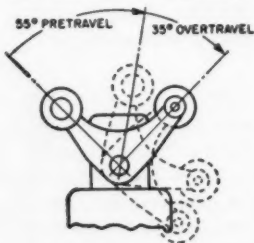


. . . for more details, circle No. 25 on Reader Service Postcard
 WESTERN INDUSTRY/OCTOBER 1959



New "Plug-in Limit" switch ... now there are nine

Here is a new "Plug-in Limit" switch with yoke actuator—the ninth in the famous "200LS" Series. The yoke is adjustable to any position on the shaft through 360°, and the operating head mounts in any of four positions. The new 206LS1 is a maintained contact switch.



"200LS" Series switches have found ready acceptance as limit switches for control of lathe carriages, grinders,

table feeds, drilling and tapping equipment, automated machinery, etc.

"Plug-in Limit" switches plug into the terminal enclosure like a radio tube and can be replaced in seconds, practically eliminating costly down-

time. They are rugged, reliable, and completely sealed against oil, water, dirt and dust.

Contact arrangement is two-circuit double-throw.

Electrical rating is: 10 amps, 120, 240, 480 vac; ½ hp, 120 vac; 1 hp, 240 vac; 0.8 amp, 115 vdc; 0.4 amp, 230 vdc; 0.1 amp, 550 vdc. Pilot duty rating is 600 vac max. Meets NEMA Industrial Control standards.



For details of the "200LS" Series, write or call the MICRO SWITCH branch office or authorized distributor near you. Consult the Yellow Pages.

MICRO SWITCH... FREEPORT, ILLINOIS

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MICRO SWITCH Precision Switches

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CONTROL SWITCHES

of unusual characteristics . . .

Application required closer reset tolerance than usual as well as ease and simplicity of field adjustment . . .

IN THE CONSTRUCTION of control gates for an Army Engineers job, Yuba Consolidated Industries of San Francisco desired control switches of unusual characteristics.

In addition to ease and simplicity of field adjustment, accuracy and permanence of setting, this application required closer reset tolerance than usual. It was desirable to permit unlimited overtravel in either direction without damage to the switch or disturbance to the settings.

Bearing in mind the usual requirements of power handling and independence from line fluctuations or power failure, an unusual design was provided Yuba by Sabouni and Associates of Berkeley to satisfy Yuba's specifications.

This design of multi-element switch has been approved and accepted by the U. S. Army Engineers.

A group of six identical units was delivered for control of flood gates on a waterway project. For this particular application, an interrupter system is incorporated to permit incremental travel over any desired portion of the control cycle.

The switch employs differentially-driven cams operated by an input shaft which is mechanically linked to the controlled unit. One switch section employs two cams, a switch unit, and the necessary linkage for operating the switch unit.

The cams are accessible for independent adjustment, and are discriminatory in that operation of the switch unit—i.e., from "open" to "close" or vice versa—will occur during the switch cycle only at the selected point at which the cams are adjusted.

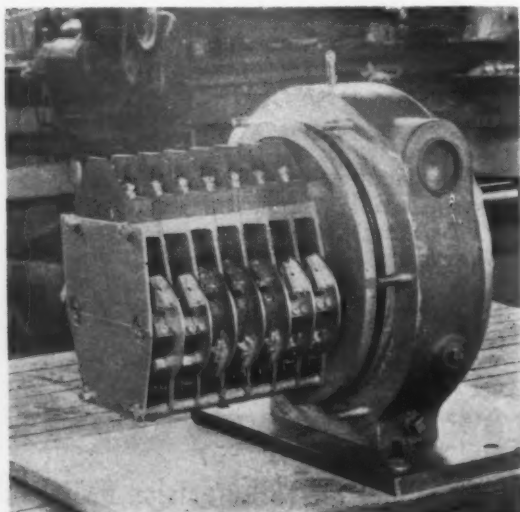
Should the complete cycle of the switch be exceeded, adjustments are not upset, but rather the switch cycle is repeated. In this way, no mechanical damage occurs to the switch. As many as fourteen switch sections have been designed into one limit switch, giving a large number of functions.

Reviewing present requirements: positioning of equipment may be accomplished with an accuracy of up to one part in 5000. For example, if one complete cycle of the switch is used for a movement of 50 feet, a function may be controlled to within about one-eighth of an inch. Repetition will readily be maintained to within one-eighth of an inch.

Using the same example, reset will be no greater than one-half inch. Reset may be considered the movement in the counter-direction required to operate the switch—that is, to open it when it has just closed, or vice versa. The reset will be about one part in 1440.

The switch unit is rated at 15 amperes for a-c, voltages up to 600. Being mechanically operated and held, the switch is independent of line changes and power failures. The switch is sensitive only to the position of the controlled equipment.

Indications are that units of this design will find useful service where repetitive operations of heavy equipment occur, such as hoisting, loading cranes, or shuttle equipment in railroad yards or dockside.



THIS CLOSE-RESET limit switch has five limit switch positions and one incremental movement. The end two switch positions form the incremental movement section. This switch will find useful service where repetitive operations of heavy equipment will occur.

BONDING TAPE for honeycomb sandwiches

New adhesive tape provides tough bond with honeycomb material . . .

COST OF PRODUCING specific types of honeycomb sandwiches has been reduced by use of an inexpensive, easy-to-handle bonding material made from cotton cloth impregnated with a partially cured phenolic resin.

Called Narmtape 105, it is used by Douglas Aircraft Co., which is producing honeycomb for airframe and commercial use in its Bell, Calif., facility.

The Douglas honeycomb, called "Aircomb," also has been introduced for use as architectural panels. For example, Aircomb has been installed as decorative partitioning on balconies of the Beverly Hilton Hotel, Beverly Hills, Calif.

Here's how Narmtape 105 works. It comes in continuous rolls that can be cut to size with scissors, then laid in place between honeycomb core and outer skins. When the assembled sandwich is exposed to heat and pressure the bonding is accomplished.

Estimates are that this adhesive can be used at total bonding expense of less than 15 cents a sq. ft.—less than half the cost of most adhesive systems currently used in honeycomb panel construction, according to Narmco Resins & Coatings Co. spokesmen.

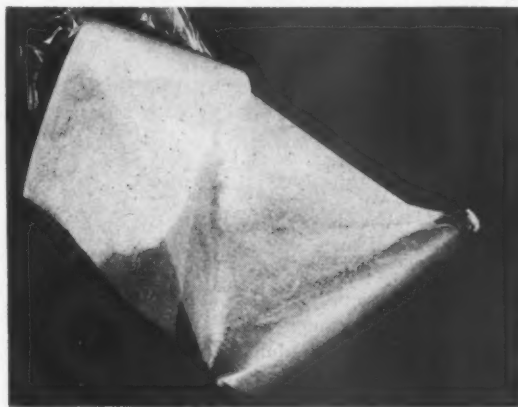
When the sandwich reaches full curing temperature, 300° F., adhesive resin impregnated in the cloth softens and flows to fill gaps between honeycomb core and outer skins, offers strong fillets. When cool, in less

than 30 minutes, cloth has hardened into a solid, thermosetting plastic film.

Narmtape 105 provides a tough, resilient bond with a variety of honeycomb core materials including aluminum, paper, and fiberglass.

In the cured state, the adhesive system has a tensile-shear strength in excess of 2500 psi. on aluminum, making a strong and stable bonding agent for applications in truck bodies, insulating walls, and architectural panels.

NARMTAPE comes in rolls, can be cut easily



ONE MAN sheet steel lifters

Are very safe, can cut handling costs at least 50%

HANDLING COSTS have been cut 50% at Maas-Hansen Steel Corp., Los Angeles, by use of steel sheet lifters designed to be operated under one-man control.

Previously, two men were required to load an angle-iron suspended from an I-Beam and supported on two chains—and even then there was some chance of the load falling.

Now, one man using lifters manufactured by the Cullen-Friestedt Co., can handle the same loads in a way which makes it impossible for loads to fall.

From his place at one end of the lifter, the operator can make the required opening and closing adjustments of the lifter jaws in a few seconds. Jaw opening and closing is controlled by a wheel mechanism; the operation is such that the unit can be used on wide or narrow material with equal efficiency.

Regardless of how wide the Lifter jaws are opened for handling wide packs or coils, the Lifter maintains the same positive grip on the material.

The obvious advantage of the lift unit is demonstrated in the fact that Maas-Hansen hasn't had a serious accident since starting to use them.

ONE MAN, lifters easily hoist sheet of steel



FUEL CONVERSION

using sawdust, wood refuse ...

Ingenious disposal system and fuel equipment converts scrap into power . . . cuts maintenance costs . . .

A MOUNTAIN OF SAWDUST AND WOOD REFUSE has been converted into fuel and maintenance savings at Samsonite Luggage Div. of Shwayder Bros., Denver.

This has been accomplished by an ingenious disposal system and by fuel equipment which enables the firm to use this scrap as fuel for steam boilers. Enough steam is produced to heat the entire plant and operate all steam-driven machinery.

The new installation has completely eliminated all purchases of coal for boiler consumption. Besides this saving, maintenance costs were cut as well. Previously, as many as four men per shift were required for firing the boilers. Now the boiler crew consists of only one engineer . . . and the plant is safer and cleaner.

The new system maintains a quantity of sawdust and also provides storage space for sawdust produced in excess of required quantity.

Before work on the new installation was begun, all boiler settings were rebuilt by Plibrico Sales & Service

Company, Denver, who were also general contractors handling construction of the sawdust disposal equipment.

The boilers were lined with plastic refractory. Two-inch slabs of this material, which comes out of the box in a moist, plastic state, were placed one atop the other to form the lining.

Each slab was solidly pounded into place with an air hammer to form a jointless lining.

After the lining was trimmed to a smooth surface and desired thickness, expansion joints were cut into its surface.

Following a 12-hour dry-out fire, the boilers were ready to bring up to load. The baking was completed in normal operation.

A Dutch Oven was built to increase furnace volume. The oven was lined with high temperature monolithic refractory material.

Air cooled walls were installed. The grate area was increased and an oven-fire air jet was incorporated.

The new sawdust disposal system provides for pneumatic collection of wood refuse from various cut-off saws, planers, shapers, and a hogger. The refuse is blown through a pipe to a 20-foot high, 80-ton capacity partitioned sawdust storage bin, which was built with two conical bottoms.

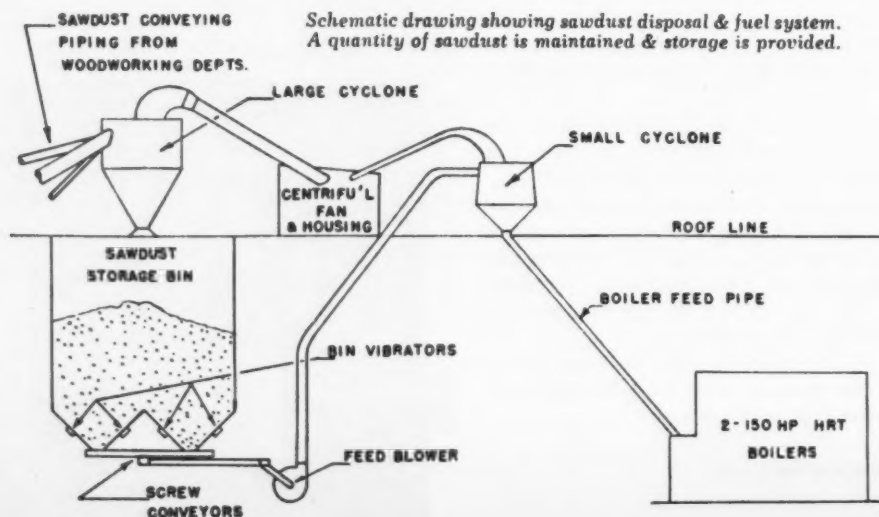
Each conical bottom is fitted with two vibrators. These loosen the material and keep it in a flowable state.

Sawdust is discharged from the bottom of the storage bin onto a 15-foot long Helicoid screw conveyor. This conveyor delivers the sawdust through its trough bottom to a blower at its far end.

The blower acts as an overhead separator. It mixes sawdust with a regulated amount of air. The mixture passes to a small cyclone and then, via 10-inch diameter feed pipes, directly into the fireboxes of two 150 hp. high-firebox steam boilers. The Multi-Rib casings in the boilers are battery set to serve as a single unit.

Electrical control instruments are mounted on a control board adjacent to these boilers.

Opposite the control panel is a recently installed 500 hp. Kewanee firebox boiler with a wood burning grate and a Todd gas-oil burner. This boiler is fired with oil, gas, and coal as well as sawdust. This boiler also has a Multi-Rib casing.





Densheath 900 installation in a paper mill. The tough insulation on this new 600-volt wire makes it particularly suited for chemical plants, refineries, and paper mills.

FOR YOUR 600-VOLT INDUSTRIAL WIRING NEEDS...

ANACONDA DENSHEATH 900

OFFERS: LONG LIFE...HIGH HEAT- AND MOISTURE-RESISTANCE...CHEMICAL STABILITY...EASY INSTALLATION

And its multiple ratings give you an added advantage!

Densheath* 900 retains its electrical and physical properties despite exposure to heat, moisture, cutting compounds, lubricants, most acids and alkalis. It has proved itself again and again—even in the most critical spots. It withstands rough handling without tearing or abrading. Densheath 900 is flexible and strips easily. It's easier to install.

Special heat-resistant insulation safely permits higher currents under exposure to higher ambient temperatures than is possible with ordinary PVC thermoplastic materials.

As a result, Densheath 900 is approved not only for use as TW...but also for machine-tool applications

and 90 C appliance wiring. These multiple ratings make one stock possible, eliminating the need to carry separate inventories of each type of wire.

For full information, or to order, call the Man from Anaconda or your Anaconda distributor. Also—write for descriptive bulletin DM-5612. Anaconda Wire & Cable Company, 25 Broadway, New York 4, N. Y.

*Reg. U.S. Pat. Off. 59208

ASK THE MAN FROM
ANACONDA®
 FOR DENSHEATH 900 WIRE

... for more details, circle No. 27 on Reader Service Postcard

SPECIAL CONTAINER

... for shipping missiles

Reuseable aluminum container features foamed-in-place, rigid urethane liners, weighs only 1150 lb. . . .

OPTIMUM PROTECTION of missile motors during shipping, or for long term storage, is now being provided by reuseable aluminum containers featuring foamed-in-place, rigid urethane liners.

The container weighs only 1150 lb., and when sealed, completely protects the motor, weighing several tons, from impact and vibration during shipping, corrosion or other contamination during storage.

The shipping container is made in two halves, each identical, and consists of trough-like shells of 5086-H32 Aluminum alloy lined with approximately 3 in. of Stafoam # 304-IF. Overall container measurements are 18 ft. long, 4 ft. wide and 4 ft. high.

The successful project is the result of cooperation between major Western firms and government agencies. The unit was designed by Donald W. Lewis, Jet Propulsion Laboratory, Pasadena, Calif., under contract to the National Aeronautics and Space Administration.

The shipping container was fabricated by Vendolator Manufacturing Co. of Fresno, and foamed by American Latex Products Corp. of Hawthorne, Calif.

The Stafoam urethane liner has an excellent high strength-to-weight ratio in this type of application.

This is how the container is made. The aluminum shell serves as the external half of the urethane liner mold and a removable wooden form as the interior half. The wooden form is lowered into the shell, then clamped into place, allowing exact spacing for the liner.

Urethane is poured into the cavity and bonds firmly to the aluminum surface which has been specially treated. The assembly is placed in an oven and heat cured 3½ hours at 165° F. A total of 94 lbs. of Stafoam 304-IF is used in both halves of the assembly.

When the cure is completed and the wooden form removed the urethane liner is carefully milled to metal tolerances.

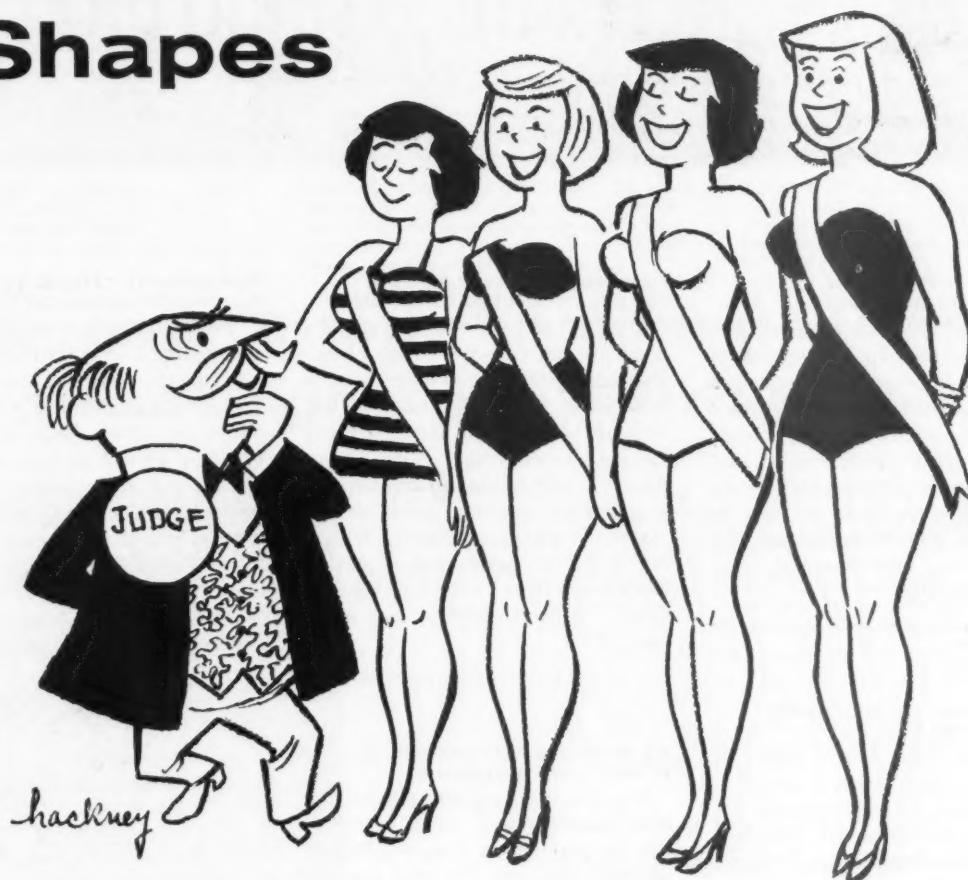
Total time required for foaming and processing the container is 60 minutes for preparation of the container and molds, 7 minutes for the foaming process, 3½ hours for curing and 14 minutes for milling to finish tolerances.

USE OF SPECIALLY designed cutter rapidly removes excess urethane and brings liner to exact tolerances to fit missile motor. Complete protection is assured motor weighing several tons.



*It takes experience
to know the very best*

Shapes



and **shapes** are our business, CAST or FORGED, and in a variety of metals. Experience and our wide range of forging and casting services assure you of dependable service and top quality.

STEEL CASTINGS • IRON CASTINGS • NODULAR CASTINGS
MALLEABLE CASTINGS • CLOSED DIE FORGINGS • PRESSED FORGINGS
EXTRUDED FORGINGS • HAMMER FORGINGS • UPSET FORGINGS

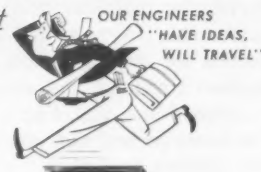
GENERAL METALS CORPORATION

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HELPFUL LITERATURE

FOR THE WEST'S PLANT OPERATING EXECUTIVES

FOR YOUR FREE COPY

CIRCLE APPROPRIATE KEY NUMBERS ON POSTCARD, p. 73

PANORAMA OF PRODUCTION IDEAS USING CONTROLLED-AIR-POWER

By means of full-color installation photographs, this 16-page brochure shows ways in which the air motors and other "controlled-air-power" work units can cut costs, improve productivity and quality, reduce scrap and prolong tool life. Helpful services offered by the firm, such as "Spot-A-Mation Idea Files," engineering aids, films, etc., are also described. *The Bellows Company*

... FOR YOUR COPY, CIRCLE NO. 200

ABRASIVE WHEEL CATALOG COVERS GRINDING FROM A TO Z

Everything from A (for agate) to Z (for zirconium) when it comes to abrasive wheel recommendations for grinding is covered in this Specifications Catalog. Comprising 57 pages, it lists over 1600 experience-tested recommendations set up alphabetically. Material, work, operation—with their respective recommendations—are listed for quick reference, making it easier to buy abrasives! *The Carborundum Company*

... FOR YOUR COPY, CIRCLE NO. 201

REVISED CARMET CATALOG CONTAINS PRICE CHANGES, PRODUCT ADDITIONS

A number of important changes from previous material are contained in this 32-page "Carmet Catalog C-16-B." Revisions include a 15% reduction in base prices of standard unground blanks and an average 5% reduction in those for brazed tools and indexable inserts; an average 30% reduction for quantity extras and on maximum quantities, and additions to the standard line, including a change of thickness on precision inserts. *Allegheny Ludlum Steel Corp.*

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PERFORMANCE, APPLICATION DATA FOR LINE OF ADJUSTABLE-SPEED DRIVES

Detailed performance and application data on a complete line of all-electric adjustable-speed drives for low horsepower jobs are provided in this 12-page booklet that features many cartoon drawings and photos. Condensed specifications, dimensions and a gearmotor selection table are included in the presentation, which covers typical applications employing these drives from 1/8 through 4 horsepower. *Reliance Electric and Engineering Co.*

... FOR YOUR COPY, CIRCLE NO. 203

A-C BULLETIN COVERS GEARMOTORS TO MEET EVERY REQUIREMENT

You'll find gearmotors to meet your every need described in this eight-page bulletin that makes it easy to select just the right unit for your requirements. The publication covers integral and all-motor types, including right angle as well as special designs from 1/4 to 100 hp. Complete design and construction features are provided for all the gearmotors featured in the bulletin. *Allis-Chalmers Mfg. Co.*

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BROCHURE POINTS OUT SIMPLICITY OF MOTOR STARTER LINE

The simplicity of a new magnetic motor is pointed up in this 16-page brochure that describes and illustrates a complete line rated through 15 hp. 440-550 volts. Design features covered include: all components front removable; dual voltage coils reconnectable on the job; "trip-free" thermal overload relays with trip indicator, and field modification kits. Many pictures and sketches, application and operation data, and selection information are included. *Furnas Electric Co.*

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COMPREHENSIVE CATALOG DESCRIBES FULL LINE OF MECHANICAL PACKINGS

You'll find comprehensive data on a complete line of mechanical packings in this 64-page catalog filled with photos, illustrations, specification charts and tables. Each packing style carries a symbol so you can quickly identify the media against which the particular packing will serve best. A chemical selection chart that lists more than 700 liquids, cross-section photos, a packing selection chart, and a section on determining causes of packing trouble are other features of the double-indexed book. *Johns-Manville Co.*

... FOR YOUR COPY, CIRCLE NO. 206

USE OF OVER-RUNNING CLUTCHES IN AIRCRAFT, MISSILE DESIGN

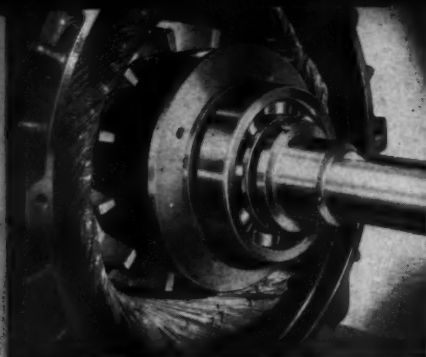
Written for aircraft design engineers, this attractive four-pager, keyed to the space-age, illustrates how Formsprag over-running clutches are used in auto pilots, rudder and canopy actuators, gas turbine starters, seat ejectors and other aircraft applications. A series of sketches clearly explains how the clutches work. Data on the firm's design service is included. *Formsprag Co.*

... FOR YOUR COPY, CIRCLE NO. 207

DOZENS OF PICTURES TO HELP YOU IN CONVEYOR EQUIPMENT CHOICE

This 16-page picture brochure brings you dozens of installation photos to show conveyors and pneumatic tube systems in use at machine shops, electric products and airplane assembly plants, foundries, brass and steel mills and similar enterprises. It deals with roller and wheel conveyors, spiral chutes, slides, roller spirals, live rollers, vertical lifts and many other types of package handling equipment. *Standard Conveyor Co.*

... FOR YOUR COPY, CIRCLE NO. 208



HEAVY DUTY BALL BEARINGS... The ball bearings used in these motors are of the highest quality, with more than ample capacity to provide long trouble-free service under heavy loads.



BEARINGS CAN BE RELUBRICATED... Original factory lubrication will last for years in normal service—but convenient grease plugs are provided to permit relubrication that adds to motor life under severe conditions.



SECURELY SEALED FOR LOW MAINTENANCE ... Both ends of these motors have running shaft seals to keep the bearings clean. Bearing housings are effectively sealed to prevent escape of grease.

Wagner Totally Enclosed Motors *Designed to give you Extra Protection*

**PROTECTED
AGAINST
CORROSIVE...
ABRASIVE**

**AND
EXPLOSIVE
ELEMENTS**

WH59-7

Here are motors that will deliver full-rated horsepower under the toughest service conditions—that will help you keep your production rates up, and give you the kind of dependable, continuous operation that is so important to automation.

Type EP Motors are fully protected against damage from corrosion, dust, abrasives, fumes, steel chips or filings. Type JP is explosion proof as well—is designed and approved for use in explosive atmospheres.

Integral ratings, 1 through 100 horsepower, are built in the latest NEMA frames, 182 through 445 US, with ribs that add mechanical strength and increase the surface cooling area.

Let your Wagner Sales Engineer show you how these protected motors can bring you savings on initial motor costs, maintenance costs, and in continuity of operation.

Branches and Distributors in All Principal Cities

Wagner Electric Corporation

6493 Plymouth Ave. • St. Louis 14, Missouri



TYPE EP.
Standard TEFC
1 to 100 hp.

TYPE JP.
Explosion proof
1 to 100 hp.

OTHER FRAME SIZES AVAILABLE IN RATINGS THROUGH 500 HP.



STAINLESS TANKS
for formaldehyde storage at Western
chemical plant.

Puget Sound Fabricates from industry's "specs"

Located "on the spot" in the West, the personnel and facilities at Puget Sound are geared to offer intimate attention and undivided responsibility on any custom fabricating job involving steel plate and alloys up to 1" in thickness. Engineering staff and shop personnel are thoroughly experienced in working with clad metals, alloys and special protective linings for vessels, tanks and plant equipment designed to meet exacting processing requirements.

The opportunity to talk over projects of any size and complexity is welcomed. Fabricating recommendations and cost estimates are promptly supplied from your blueprint plans at no obligation.

Request Brochure No. B-59



PS **PUGET SOUND**
F **FABRICATORS, INC.**
Craftsmen in Metals
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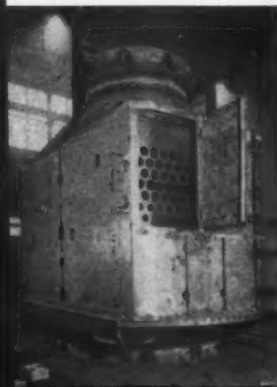


SURGE TANK ORIFICE,
exemplifying Puget Sound Fabricators' skill in handling the fabrication of heavy plate, was supplied for a hydro-electric development in Washington.



STEEL STACK,
towering over 150' in height, erected at
a Seattle plant as part of a fume removal
system.

AIR PRE-HEATER
and casing of carbon steel for refinery
in the West.



HEAT EXCHANGER
combining stainless and mild steel for
installation in Western electro-chemical
plant.

BROCHURE ABOUT TILES, FLOOR MATS MADE WITH TOUGH NYRACORD

Nyracord compound—a new nylon, rubber and additives material that provides unequalled resistance to abusive use and traffic—are detailed in this brochure about floor mats, tile and stair treads made of this product. The 4-pager tells by word-and-picture how Nyracord is made and shows several products made from this tough but resilient and easily-cleaned material. *American Mat Corp.*

... FOR YOUR COPY, CIRCLE NO. 209

HOW TO PLAN BUILDINGS WITH GREATER PROFIT POTENTIAL

Advantages of multi-purpose structures — buildings easily converted or adapted to other uses — are discussed in this eight-page booklet about how to plan commercial and industrial buildings with greater profit potentials. By means of sketches and text, the convenient-sized pamphlet makes a case for clear-span, post-free structures as the most adaptable, multi-purpose buildings. *Taylor Roof Structures*

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24-PAGE CATALOG DEALS WITH ARC WELDING EQUIPMENT

This 24-page catalog about arc welding machines gives specifications and ordering data on gasoline and Diesel engine driven welders, combination units, rectifier and transformer type welders, inert-gas-shielded arc welders and a complete line of automatic and semiautomatic welding equipment. Induction heating and pipe thawing equipment are also described. *Hobart Brothers*

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COMPREHENSIVE BULLETIN PROVIDES APPLICATION DATA ON ELECTRO CLUTCHES

Design, specification and application material about a line of electromagnetic clutches is furnished in this 20-page bulletin filled with pictures, drawings and sketches. Applications for the clutches, which come in six series with torque capacities from 1.8 through 13,000 pound/ft. — include machine tools, general industrial equipment and special equipment such as welders, conveyors, and nuclear control mechanisms. *I-T-E Circuit Breaker Co.*

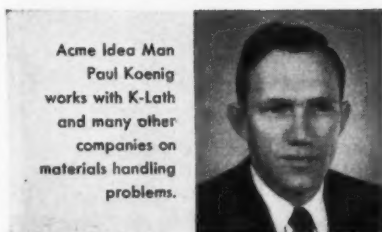
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... for more details, circle No. 30 on Reader Service Postcard

WESTERN INDUSTRY/OCTOBER 1959



**Work with your AIM*... K-Lath Corporation does...
Unitizing halves handling costs**



Acme Idea Man
Paul Koenig
works with K-Lath
and many other
companies on
materials handling
problems.

K-LATH CORPORATION, Alhambra, Calif., working with their Acme Idea Man, developed methods of unitizing with Acme Steel Strapping that cut materials handling costs in half. Customers enjoy time and labor-saving benefits, too. (Idea No. S3-34)

Warehouse storage capacity has doubled, because the palletized units can be stacked two or three high. And 10% more of these tight, secure units can be loaded in box cars, requiring less dunnage. The ease of handling these units is often used as a selling point by K-Lath representatives.

Workers like the new B5 Stretcher—it's easy and fast to operate in any position on most any application.

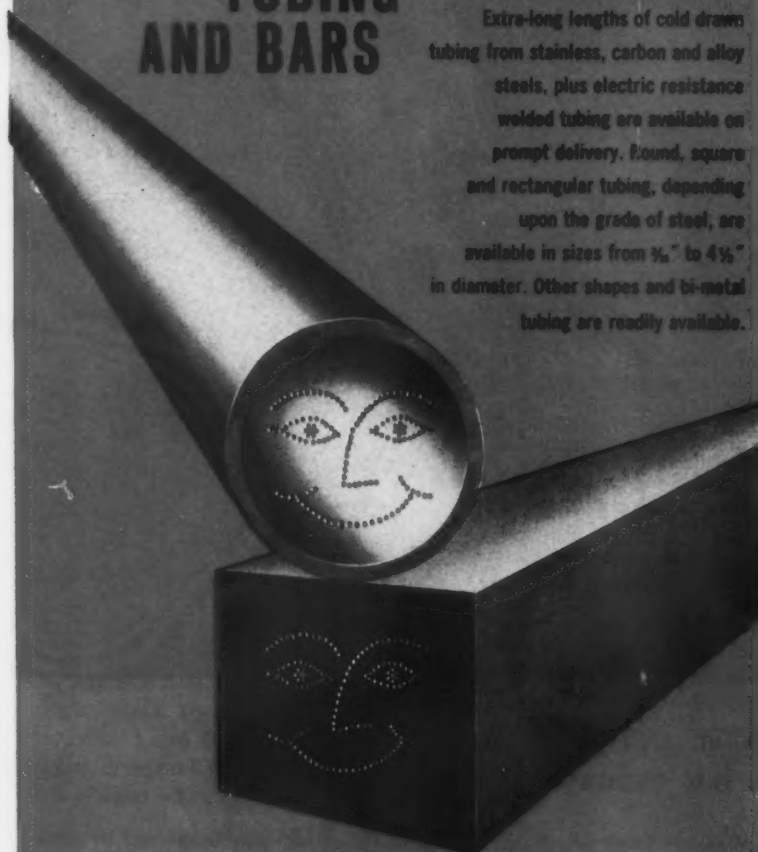
***Work with your Acme Idea Man** on your packaging problems. His experience and ideas will provide you with many time and money-saving suggestions. Call or write: Dept. WCS 109, Acme Steel Products Div., Acme Steel Company, 4901 Pacific Blvd., Los Angeles 58, California. Also San Francisco, Seattle, Portland.



STEEL STRAPPING

... for more details, circle No. 31 on Reader Service Postcard

DOUBLE HEADER TUBING AND BARS



Both cold drawn steel tubing and cold drawn steel bars are made at Pacific Tube Co. with the same careful, quality-controlled production processes. Extra-long lengths of cold drawn tubing from stainless, carbon and alloy steels, plus electric resistance welded tubing are available on prompt delivery. Round, square and rectangular tubing, depending upon the grade of steel, are available in sizes from $\frac{1}{8}$ " to 4 $\frac{1}{2}$ " in diameter. Other shapes and bi-metal tubing are readily available.

PATCO makes cold drawn steel bars in rounds from $\frac{1}{8}$ " to 4 $\frac{1}{2}$ "; squares and hexagons from $\frac{1}{8}$ " to 2 $\frac{1}{2}$ " in a wide range of analyses including C-1018, C-1137, C-1117, C-1045 and C-1213, and leaded steel bars in Ledloy Grades A and B; cold drawn ground and polished shafting— $\frac{1}{4}$ " to 2 $\frac{1}{2}$ "; turned, ground and polished and turned and polished shafting—1" to 4 $\frac{1}{2}$ ".

patco

**PACIFIC TUBE
COMPANY**

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Western Representative for Superior Tube Co.



20-PAGE BULLETIN ON HIGH SPEED INDUSTRIAL DRIVE UNITS

Complete facts on standard industrial drives, pipeline and air conditioning drives, and special and super Hi-Speed drives are furnished in this 22-page catalog about Speedmaster Hi-Speed units. Specifications are given for all, and in the section for standard drives you'll find ordering instructions, outline dimensions for various units, pictures of typical installations and various tables fill out the picture. *Western Gear Corp.*

... FOR YOUR COPY, CIRCLE NO. 213

50-PAGE CATALOG COVERS ALL TYPES OF VIBRATING SCREENS

A vibrating screen to handle each material characteristic in a type and size for every operating requirement can be found in this comprehensive 50-page catalog filled with installation pictures, drawings, tables and charts. Among the 12 basic types covered you'll find those for separating solids from liquids, for sizing and scalping light or fine materials, for straightline motion dewatering, washing and sizing, for heavy duty separation of large castings from molds, and many others. *Link-Belt Co.*

... FOR YOUR COPY, CIRCLE NO. 214

CARDBOARD CATALOG GIVES ANSWERS TO ALL YOUR GAGING PROBLEMS

Whether it's one gage or a complete production inspection kit you need you'll find details about it in this eight-page cardboard catalog. It covers recess, bore, shallow hole, dial pin, depth, flush pin, snap, caliper, and sheet thickness gages, bench comparators and tooling balls. Each product is pictured, described and priced. *Reliant Gage & Supply Co.*

... FOR YOUR COPY, CIRCLE NO. 215

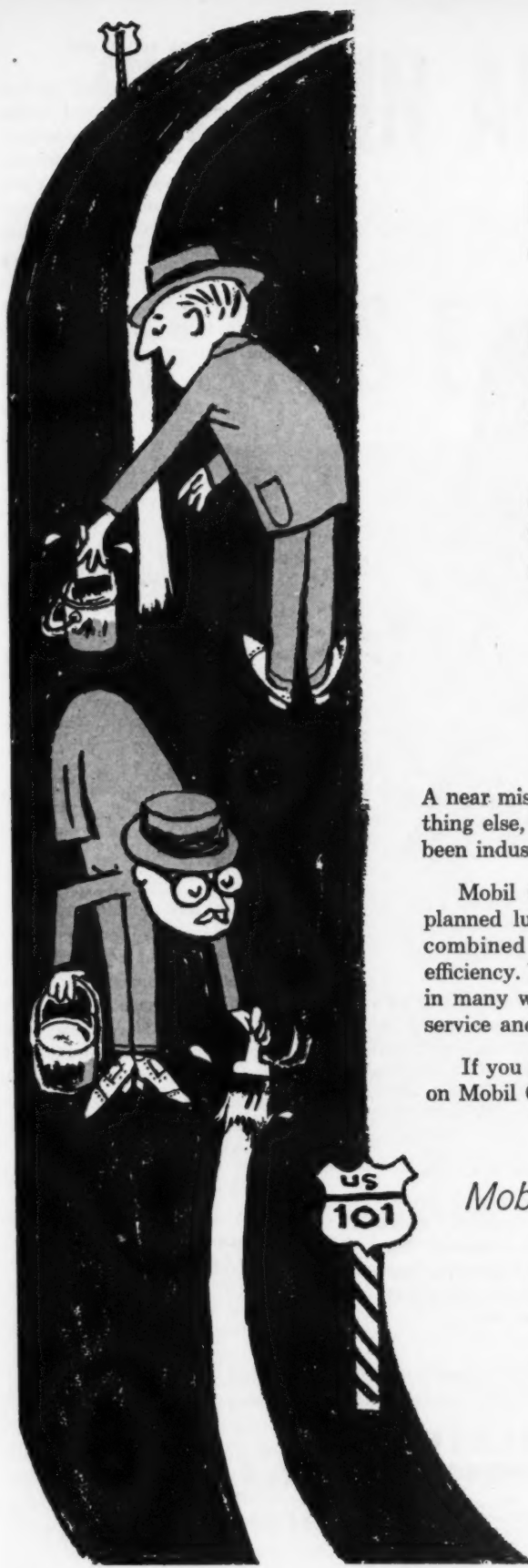
LIFT TRUCK BROCHURE DESCRIBES DUAL-RANGE TRANSMISSION FEATURES

The key to increased lift truck performance is given in this four-page brochure about the fully power-shifted, dual-range Hystamatic transmission on lift trucks from 6,000 to 12,000-lb. capacity. It points out operation serviceability, safety and design features of the transmission, offered on two series of pneumatic tire lift trucks, the Challenger 60-70-80 and the new 100-120 series. *Hyster Co.*

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... for more details, circle No. 32 on Reader Service Postcard

WESTERN INDUSTRY/OCTOBER 1959



IT PAYS TO RELY ON A SPECIALIST...

A Mobil Program of
Correct Lubrication
Aligns Management With:

- ★ Accurate Diagnosis
- ★ Advanced Methods
- ★ Proven Products

A near miss is not close enough! In correct lubrication, as in anything else, it pays to rely on a specialist. For 93 years Mobil has been industry's *lubrication specialist*.

Mobil Correct Lubrication Programs align management with planned lubrication on a sound engineering basis. New methods combined with proven products help you cut costs—improve efficiency. Your qualified Mobil lubrication specialist will assist you in many ways with problem analysis, new techniques, laboratory service and personnel training.

If you don't want to miss the mark, insist on a specialist. Insist on Mobil Correct Lubrication.

Mobil Correct Lubrication



**GENERAL PETROLEUM
CORPORATION**

A SOCONY MOBIL COMPANY



Meeting industry's diverse needs... CF&I Industrial Wire Cloth

The giant steelman is the Image of CF&I—producer of steel products of all types—including CF&I Industrial Wire Cloth, made to meet the widest possible range of end-use requirements:

- in carbon, galvanized and stainless steels, aluminum, brass, copper, monel and other alloys
- in cloth openings as large as 6" or as small as 200 mesh
- for use as filter cloth, window and machinery guards, reinforcing materials, industrial processing and conveying components, etc.



For information, prices and quick-delivery service, contact the CF&I sales office nearest you.

INDUSTRIAL WIRE CLOTH THE COLORADO FUEL AND IRON CORPORATION

In the West: THE COLORADO FUEL AND IRON CORPORATION—Albuquerque • Amarillo • Billings • Boise • Butte • Denver • El Paso • Farmington (N. M.) • Ft. Worth • Fresno • Houston • Lincoln • Los Angeles • Oakland • Oklahoma City • Phoenix • Portland • Pueblo • Sacramento • Salt Lake City • San Francisco • San Leandro • Seattle • Spokane • Wichita
In the East: WICKWIRE SPENCER STEEL DIVISION—Atlanta • Boston • Buffalo • Chicago • Detroit • New Orleans • New York • Philadelphia • **CF&I OFFICE IN CANADA:** Montreal • **CANADIAN REPRESENTATIVES AT:** Calgary • Edmonton • Vancouver • Winnipeg

The CF&I Image, reflecting CF&I's years of Wire Cloth fabricating experience, is your assurance of strong, tightly woven cloth with square, even mesh that lasts longer, stays accurate and keeps its attractive appearance.

Other CF&I Steel Products

Coburn Overhead Conveying Systems
Sliding and Fire Door Hardware • Wissco
Metal Processing Belts • Reolock Chain
Link Fence • CF&I-Wickwire Wire Rope
and Slings • CF&I-Wickwire Wire • Wick-
wire Springs and Formed Wires

FACTS AND PHOTOS ABOUT LINE OF VARIABLE SPEED DRIVES

Constant speed unaffected by load variations, greater safety and longer belt life are some of the operating advantages discussed in this eight-page brochure about Speed-Trol variable speed drives that offer positive control of both pulleys. These facts and salient construction features are pointed out in the text accompanying a large cutaway of a typical unit. Three basic types plus 10 modifications are pictured in the booklet. *Sterling Electric Motors*

... FOR YOUR COPY, CIRCLE NO. 217

CATALOG ON SMALL BASIC SWITCHES COVERS FOUR IMPORTANT GROUPS

This 20-page catalog of small basic switches covers four important groups—Type V3, postage-stamp-sized; type TB 2-circuit; type ISXI sub-subminiature switches and type SM subminiature switches—pointing out outstanding features of each. The handbook is a valuable guide for designers of electronic, airborne and other equipment—anyone with requirements for a compact snap-action switch. *Micro Switch, Div. of Minneapolis-Honeywell Regulator Co.*

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ALL ABOUT SEPARATING EQUIPMENT FOR BARREL FINISHING OPERATIONS

Details and specifications on a complete line of separating equipment for barrel finishing operations are provided in this four-page bulletin. It covers a compact, low-cost magnetic separator; a motor driven mechanical separator; the portable separator, and separating screens for all sizes of conventional media hoist pans. *Techline Div., Wheelabrator Corp.*

... FOR YOUR COPY, CIRCLE NO. 219

FOLD-OUT FEATURES & DESIGN ADVANTAGES OF IRON BODY GATE VALVES

This five-page fold-out features a large labeled cutaway that points up 8 design advantages of this firm's iron body gate valves for applications in nearly every industry. The circular lists service ratings, sizes, dimensions, and material specifications for several valves; it also has a section about higher strength cast iron wedge gate valves used on many lines carrying steam, water, oil and gas. *Walworth Co.*

... FOR YOUR COPY, CIRCLE NO. 220

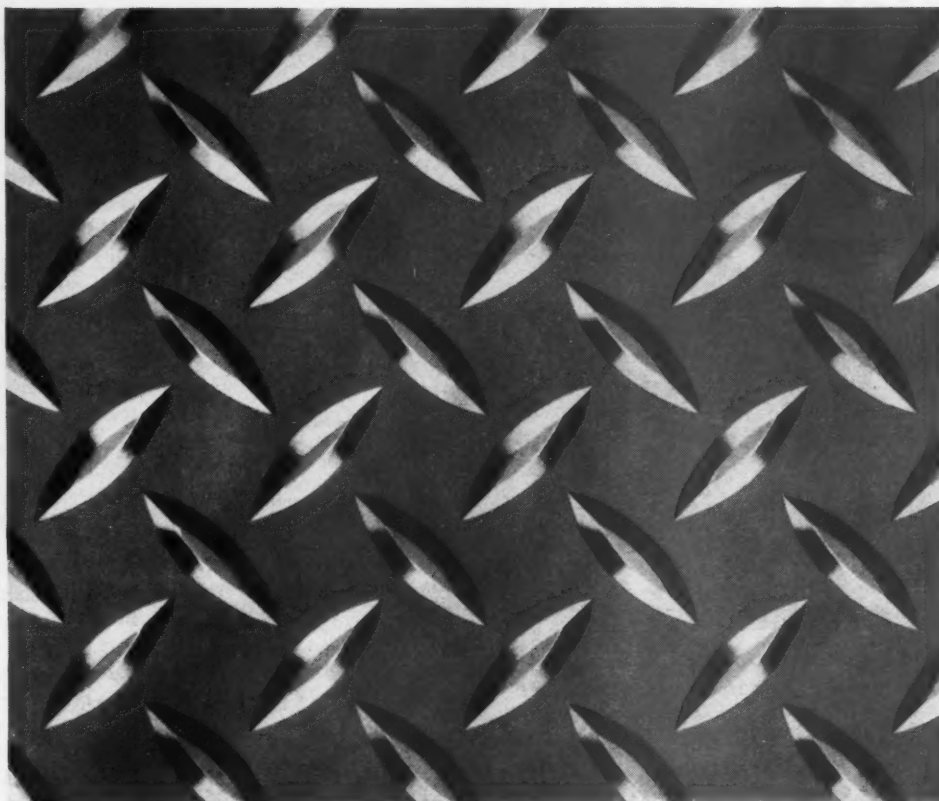
... for more details, circle No. 34 on Reader Service Postcard

WESTERN INDUSTRY/OCTOBER 1959

SHEAR IN ANY DIRECTION

Alan Wood Super Diamond Floor Plate

...IS EASY TO MATCH



The exclusive pattern of A. W. Super Diamond rolled steel floor plate lets you shear it in any direction on the plate . . . this flooring is easily matched. And, the arrangement of the pattern allows you to bend it at any place.

This is a heavy duty floor plate that will last for years . . . and provide a safe, non-skid footing. No

chipping, splintering or cracking. And you can sweep it . . . hose it . . . mop it . . . A. W. Super Diamond is easy to clean from any angle. No pockets to hold dirt or water.

For easy fabrication and installation . . . for safety . . . for long wear . . . specify A. W. Super Diamond.

Write for Bulletin SD-N6.



ALAN WOOD STEEL COMPANY
CONSHOHOCKEN, PA.

DISTRICT OFFICES: Philadelphia • New York • Los Angeles • Boston • REPRESENTATIVES: Atlanta • Buffalo
Cincinnati • Cleveland • Detroit • Houston • Pittsburgh • Richmond • St. Paul • San Francisco • Seattle
Montreal, Toronto and Vancouver, Canada—A. C. Leslie & Co., Ltd.

... for more details, circle No. 35 on Reader Service Postcard

MOST POWER PER DOLLAR!



**Compact,
Powerful 1/2"
HOLE-SHOOTER**



ALTERNATE MODEL 613

450 RPM no load with triple reduction gearing. Full 1/2 HP with 11 ft. lbs. of torque at the chuck.

\$68⁰⁰
NET



MODEL 612

for Close-Quarter Drilling

Only 9 1/2 lbs. ... 12 1/4" long with rugged Milwaukee-Built motor that delivers full 1/2 HP with 8 ft. lbs. torque at the chuck ... 600 RPM no load. Double reduction gearing for greater working power. Spade handle directly-in-line with chuck for easier drilling ... straighter, truer holes. No other comparable 1/2-inch drill gives you so much power and such dependable performance.

\$65⁰⁰
NET

..and Here Are Two Popular 1/4" Hole Shooters



The Famous Model 35 "In-Line" Hole-Shooter

Compact, 3 1/2 lbs. with palm-push pistol grip ... 2000 RPM ... powered by 1/4 HP heavy-duty Milwaukee-Built motor that packs more than enough power for any job ... in its rated capacity.

\$49⁵⁰
NET



Model S-114 for General Purpose Drilling

Extra rugged 1/4 HP Milwaukee-Built AC-DC motor ... 1900 RPM chuck speed ... especially suited for general maintenance work, yet rugged enough to withstand continuous service. Only 5 1/4 lbs. ... perfectly balanced ... easy to handle.

\$42⁵⁰
NET



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"Tools-Electric"

MILWAUKEE ELECTRIC TOOL CORPORATION

America's Fastest Growing Manufacturer of Industrial Electric Tools

216 11th Street
San Francisco 3, California

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Los Angeles 6, California

Write for Catalog G-8

... for more details, circle No. 36 on Reader Service Postcard

DATA ON 2,000-LB. CAPACITY PNEUMATIC TIRE FORK TRUCK

A 2000-lb. capacity pneumatic tire fork truck is the subject of this four-page color brochure that contains specifications and construction features of the gas-tired truck designed for handling and tiering over rough floors in congested areas. Drawings show dimensions, turning radius and up-right heights; tables give load capacities and stacking ability; sketches illustrate various uses of the machine. Industrial Truck Div., Clark Equipment Co.

... FOR YOUR COPY, CIRCLE NO. 221

EIGHT-PAGE CATALOG DIGEST ON ELECTRIC MOTION CONTROL

Smoother operation, infinite control, and constant self-adjustment are some of the advantages described for a line of electric brakes, clutches and clutch-brakes in this eight-page catalog digest on electric motion control. Cutaways, drawings and product pictures supplement the text which covers primary brakes and clutches, power-safe brakes, controls, stationary-field clutches, replaceable-face brakes and electric motor brakes. Industrial Div., Warner Electric Brake & Clutch Co.

... FOR YOUR COPY, CIRCLE NO. 222

FACTS ON FLAME-CUTTING MACHINE FOR INTRICATE METAL PARTS

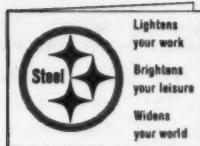
How tens or thousands of intricate metal parts can be easily reproduced from simple pencil sketches on ordinary paper is described in this illustrated eight-page fold-out about a new, fully automated flame-cutting machine. It explains outstanding features of the machine, such as solenoid-operated valves, blowpipe positions, circle-cutting attachment, and others. Linde Co., Div. of Union Carbide Corp.

... FOR YOUR COPY, CIRCLE NO. 223

BOOKLET TELLS HOW AIR POWER STRAPPING TOOLS SERVE INDUSTRY

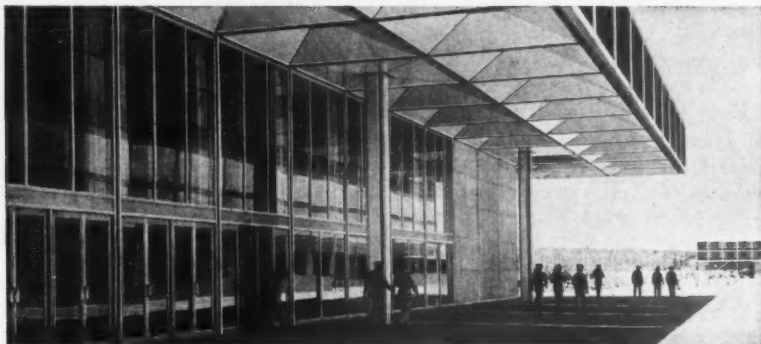
Many of the ways in which air power strapping tools are serving industry are described in this four-page booklet which tells how you can save time and effort, yet do a better, more uniform job of steel strapping. Useful data and descriptions of the firm's complete line of air power tensioners and sealers are included. Signode Steel Strapping Co.

... FOR YOUR COPY, CIRCLE NO. 224



USS is a registered trademark

Westerners like these new ideas in **USS** steel



New Space for Cadets. Biggest job of its kind—the new cadet dining hall at United States Air Force Academy, Colorado Springs. Capacity: 3,000 hungry men. The roof is a 2-acre grid of USS Steel, floating on sixteen slender columns. And inside, a massive coffered ceiling is finished in gleaming USS Stainless Steel for permanent beauty and easy maintenance.

New Room for Crowded Classmates. Western school boards are solving classroom shortages with steel! Example: Palm Springs High School, well built of lightweight structurals, sheets and roof decking of USS Steel. This modern school has survived two semesters of teen-age enthusiasm and desert weather and still looks as new as it did on dedication day!



Steelwork: Calcor Corp., Huntington Park, Calif. Architects: Wexler & Harrison, Palm Springs, Calif.



New Fire Insurance for Students. Fire doors by M. Reuter & Sons, Portland, Ore., for example, are formed from durable USS Cold Rolled Sheets to surpass the highest specifications for any Western school installation.



New Support for Deep Sea Denizens. At Stanford University Zoology Museum, Palo Alto, Calif., preserved fish are safe and accessible on new steel shelves formed from USS Cold Rolled Sheets by Harbor Metal Products Corp., Belmont, California. In Western schools, offices, and plants, shelving of USS Sheets carries more weight longer at less cost per square foot.

STEEL FOR EVERY PURPOSE FROM A SINGLE SOURCE

Throughout the West, United States Steel products are at the head of the class in school building. The cost-saving advantages of steel for school construction, furniture and playground equipment can be a factor in winning bids. Ask your USS representative.



**Columbia-Geneva Steel
Division of
United States Steel**

EXPANDED LINE OF PARA-FLEX COUPLINGS DETAILED IN BULLETIN

Details on two new sizes of Para-Flex flexible cushion couplings are contained in this 12-page bulletin that provides tables of horsepower ratings, prices, dimensions and service factors for many applications. The 12 sizes of couplings range from fractional to 190 hp. per 100 rpm., with the new PX24 capable of delivering up to 2,000 hp. at 1080 rpm. Photographs, drawings and text explain design features and operating characteristics of Para-flex. *Dodge Mfg. Corp.*

... FOR YOUR COPY, CIRCLE NO. 225

CASE STUDIES HIGHLIGHT BULLETIN CONTAINERS FOR PRECISION PRODUCTS

Six case studies that show how Kennett containers improve material handling and reduce damage to precision products are spotlighted in this six-page bulletin. It illustrates the firm's complete line: utility, nesting-stacking and bin-front trays; mill and tote boxes; fibre and drop-sided trucks; reusable shipping containers and barrels. Photographs point out such properties as durability, resiliency, light weight, quietness and corrosion resistance. *National Vulcanized Fibre Co.* ... FOR YOUR COPY, CIRCLE NO. 226

HOW TO INSURE SAFETY IN ELECTRIC WELDING

The precautions and safe practices in this book have been compiled through many years of experience with electric welding and they cover the essential safety points for both inert gas-shielded arc welding and arc welding work habits. While electric welding isn't particularly hazardous, every welder should be reminded every once in a while of safe ways to store materials, how to set up and operate equipment, how to maintain the equipment and of good working habits. *Linde Co.*

... FOR YOUR COPY, CIRCLE NO. 227



GOLD STAR SR

This d-c rectifier type welder does more things better than any other welder of its class because —

- Its new transformer (Miller designed and built) has integral flux diverter.
- Its new weld stabilized circuit delivers the ultimate in speed of metal deposition.
- Its new completely sealed semi-metallic rectifier — designed for welding — provides the most efficient d-c for welding ever devised.

These features contribute to the Gold Star SR's greater arc stability, denser welds, easy arc starting and flexibility to handle all electrodes in all positions.

Performance-proved wherever profits are important, the Gold Star SR is available in single and duplex models of 200 to 1200 amperes at 60% duty cycle ratings.



GOLD STAR *All-Weather* SRH

The features that set the SR above and beyond the normal standards of welder performance belong to the SRH also. But, in addition to the horizontal design for easier stacking and paralleling, this welder has an "all-weather" construction that includes baked varnish coated transformers and rectifiers plus phosphatizing and painting of all base and sheet metal — even fan blades. Cam-Lok receptacles are standard equipment. The Gold Star SRH welds real well.



Complete specifications on these Gold Star models will be sent promptly.

miller

ELECTRIC MANUFACTURING COMPANY, INC., APPLETON, WISCONSIN

• Distributed in Canada by Canadian Liquid Air Co. Ltd. Montreal

... for more details, circle No. 37 on Reader Service Postcard

ALL THE FACTS ON NEW SPEED CONTROL SYSTEM FOR FORK LIFTS

Details about a new line of electric powered fork trucks with the Acro-Smooth speed control system are presented in this illustrated catalog page. It explains the carbon pile control system that combines ultra accurate inching with fast acceleration. Operating and design features are highlighted in the literature, which covers 4,000, 5,000 and 6,000-lb. capacity models. *The Elwell-Parker Electric Co.*

... FOR YOUR COPY, CIRCLE NO. 228

DATA SHEET ON POLYCARBONATE ROD, PLATE, DISCS AND TUBING

Two charts—one on physical properties and the other on chemical resistance—are provided in this one-page bulletin about Polypenco polycarbonate mill shapes. Other features are descriptions and suggested applications for polycarbonate rod, plate, discs and tubing which are machinable on standard metalworking equipment. *The Polymer Corp. of Pennsylvania*

... FOR YOUR COPY, CIRCLE NO. 229

POCKET-SIZE BULLETIN GIVES A NEW LOOK AT LEAD DEVIATION

The evils of long engagements—or lead deviation as it applies to long thread engagement—are discussed in this pocket-size bulletin. The reasons for fit and assembly problems in the thread fastener field, along with a suggested solution, are reviewed in the four-pager which has a set of charts to show how much screw thread pitch diameter tolerance is consumed by increasing lengths of engagement. *Standard Pressed Steel Co.*

... FOR YOUR COPY, CIRCLE NO. 230

WESTERN INDUSTRY/OCTOBER 1959

**TWO BOOKLETS ABOUT DIFFERENT
TYPES OF SPEED REDUCERS**

Two similar booklets, one with 20 pages, and the other 14, give you complete selection data on inline and right-angle speed reducers and vertical-helical speed reducers. Each contains numerous pictures, drawings and tables relating to application, horsepower, dimensions, etc. Design advantages are pointed out and helpful lubrication information included. *Western Gear Corp.*

... FOR YOUR COPY, CIRCLE NO. 231

**INSIDE STORY ON RUBBER GASKET
JOINT FOR LARGE STEEL WATER PIPE**

You can find out about a faster, more economical method of joining large diameter steel water pipe — it employs a rubber gasket joint instead of field welding—in this 10-page booklet that includes cross section drawings, specifications and details on how pipe sections are installed. It tells how the joint can be used in coupling pipe ranging from 36 to 120 in. in diameter, or larger; how it permits rapid field installation, and provides a water-tight coupling with little maintenance. *Kaiser Steel Corp.*

... FOR YOUR COPY, CIRCLE NO. 232

**SERIES OF 5 PAMPHLETS DEALS
WITH WIRE ROPE DIVISION PRODUCTS**

This series of five colorful pamphlets is designed to inform you about seven products made by J&L's wire rope division. ... Centerfit wire rope; Cable Laid slings, PlastiKore and SpringKore wire rope; JalKlamp and JalLoc slings, and Oil Field manila rope. Each pamphlet describes various uses for which the product is best suited. Strength and size specifications are tabulated and a brief how-to-order guide about wire rope is given in the booklets about these products. *Jones & Laughlin Steel Corp.*

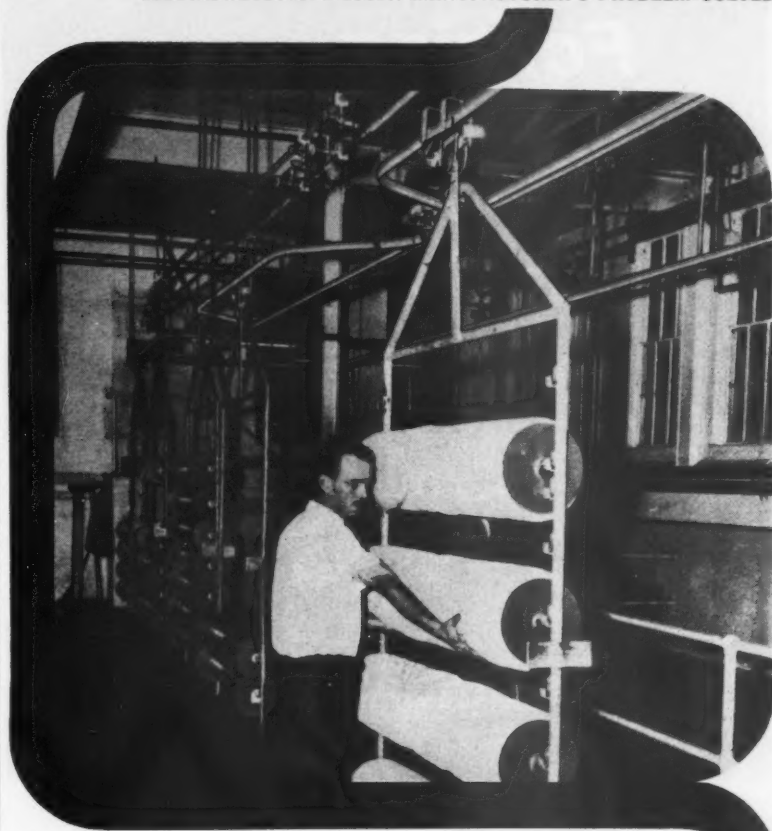
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**CIRCULAR GIVES DATA ON COMPONENTS
FOR COMPRESSED AIR CIRCUITS**

Components that make up combination units for compressed air circuits are the subject of this one-page circular published by a firm that makes compressed air filters, regulators and lubricators. Exclusive features, diagrams, operational explanation and specifications are fully outlined for popular sizes and models. *Wilkerson Corp.*

... FOR YOUR COPY, CIRCLE NO. 234

MASSACHUSETTS WOOLEN MANUFACTURER'S PROBLEM SOLVED



POWER AND FREE CONVEYOR SYSTEM

- Eliminates manual handling and reduces manpower requirements
- Moves 160-lb. spools of yarn through a 2-story processing cycle
- Automatically dispatches carriers to several operating stations
- Automatically stores in-process goods by grade and color on gravity lines
- Returns empty carriers to one of 13 loading stations

In this system, power is provided by a regular overhead Chainveyor system. Pusher dogs, mounted directly to the chain serve as the motivating force, automatically moving the loads attached to the free carriers. Free carriers move in storage or free track alongside the power track. Switches automatically shunt carriers off and onto powered lines as desired. Carriers then can travel by gravity or may be hand-pushed on storage or free track.

For further information about Chainveyor power and free systems, engineered for economical automatic materials handling write:

QUALITY
OVERHEAD
CONVEYOR
SYSTEMS

CHAINVEYOR®
CORPORATION

Engineers & Manufacturers

DISTRIBUTORS IN ALL PRINCIPAL CITIES

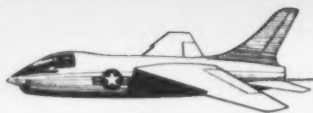
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... for more details, circle No. 38 on Reader Service Postcard

Forging Eliminates PROFILE Machining

18 inch
aluminum
impeller



This big 18" aluminum* impeller was originally *machined* from a rough forging...requiring many costly man-hours. Then Arcturus, utilizing techniques they have pioneered, developed a method for *forging* the vanes to the finished state shown above...saving considerably on material, eliminating all profile machining and reducing the cost of the finished part substantially. Grain flow follows the contour of the part, providing greatest possible strength.

This was no minor achievement as the impeller was an exceptionally difficult part to make by any known method. The vanes are approximately 3" high and less than 1/16" thick, yet extremely close tolerances were held.

Very likely, that machined part you are designing could be *forged* by Arcturus far more efficiently. We work in most metals and high temperature alloys. Send us your drawings and specifications today for further information.

*Can also be forged from many high-strength alloys.

FORGE AHEAD WITH
Arcturus
MANUFACTURING CORPORATION



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... for more details, circle No. 39 on Reader Service Postcard

SIX-PAGE MECHANICAL DRIVE BOOKLET FEATURES CUTAWAY VIEW OF UNIT

A cutaway view of a typical Allispede unit is a highlight of this six-page publication on a mechanical adjustable speed drive used in material handling, food and chemical processing, wood-working and machine tools. Engineering and application data are included and illustrations show modifications to the basic drive, such as remote controls and mounting flanges. Graphs point up speed regulation benefits gained by using an optional synchronous induction motor. *The Louis Allis Co.*

... FOR YOUR COPY, CIRCLE NO. 235

94-PAGE DESIGN MANUAL FOR CLAMPS, BRACKETS, LINE SUPPORTS AND SHIMS

Over 400 illustrations are contained in the 94 pages of this engineering design manual about a complete line of standard clamps, line supports, brackets and shims in many shapes and sizes. Labor and cost saving installation techniques for all types of electronic, hydraulic and mechanical harnessing problems are included, along with data on very high and low temperature insulating materials and chemical resistance. An illustrated index and preprinted sketch sheets are other features. *TA Mfg. Corp.*

... FOR YOUR COPY, CIRCLE NO. 236

"WHO'S WHO IN CO.," BROCHURE STARS JOHN CARRADINE

Three welding processes share billing with John Carradine, famed movie and T-V star in this 16-page brochure, "Who's Who in CO." C-OManual, C-OMatic and C-OManual Button Welder processes are described and illustrated with charts covering applications from lap joints and fillets to butt and lap welds. The actor's comments and comedy serve to brighten and clarify the explanation. *A. O. Smith Corp.*

... FOR YOUR COPY, CIRCLE NO. 237

EIGHT-PAGE BULLETIN DESCRIBES LINE OF REDUCED-VOLTAGE STARTERS

When and where to use reduced-voltage motor-starting equipment is explained in this eight-page bulletin that also defines the products and presents selection data. Photos with callouts are included for the manual and magnetic autotransformer, for the primary resistor and the part winding starters. Schematic connection diagrams, a comparison table, facts on construction are other features. *General Electric Co.*

... FOR YOUR COPY, CIRCLE NO. 238
WESTERN INDUSTRY/OCTOBER 1959

**DATA ON NEW PLATE PASTING METHOD
WITH QUALITY CONTROL BY ACCURAY**

This new bulletin serves to announce a battery company's new method of plate pasting employing automatic quality control by AccuRay which precisely regulates the weight of active materials pasted into the grid-work structure of both positive and negative battery plates to a uniformity of plus or minus $\frac{1}{2}\%$. A closeup of the new, highly uniform AccuPak is enclosed in the bulletin. *C & D Batteries, Inc.*

... FOR YOUR COPY, CIRCLE NO. 239

**FOUR-PAGER DESCRIBES FEATURES
OF VERTICAL TURBINE-TYPE PUMPS**

Features such as space saving, flexibility, low maintenance and initial cost are pointed out in a four-page bulletin dealing with short-coupled vertical turbine-type pumps for a wide range of applications. The pumps are available in 40 sizes, 20 to 8000 gpm., at heads to 400 feet or more. Sketches to show typical installations and cutaway drawings further emphasize design advantages. *Allis-Chalmers Mfg. Co.*

... FOR YOUR COPY, CIRCLE NO. 240

**TECHNICAL DATA FOR HORIZONTAL,
VERTICAL MOUNTED GEARMOTORS**

Two tables, one for load characteristics and the other a selection table arranged according to AGMA classifications, are highlights of this comprehensive brochure about gearmotors. The 32-page catalog contains technical information on horizontal and vertical mounted gearmotors with capacity up to 125 hp. and a variety of output speeds ranging from 780 to 1.2 rpm. *Jones Machinery Div., Hewitt-Robins, Inc.*

... FOR YOUR COPY, CIRCLE NO. 241

**BULLETIN SUMMARIZES FULL
LINE OF MOTORS AND DRIVES**

A complete line of a-c. and d-c. standard motors, special motors, gearmotors, and adjustable speed drives is described in this 8-page bulletin filled with information on motors and drives for many different industries. Individual applications include irrigation, power plant, pump, mixer, agitator, pipeline, municipal, boiler feed pump and test equipment. It summarizes characteristics and modifications for 20 basic types of motors and drives ranging from $\frac{3}{4}$ to 2000 horsepower. *The Louis Allis Co.*

... FOR YOUR COPY, CIRCLE NO. 242
WESTERN INDUSTRY/OCTOBER 1959

NEW DEVELOPMENTS

in

Kinney®

HIGH VACUUM PUMPS AND EQUIPMENT



LOWERED SILHOUETTE AND ADVANCED PERFORMANCE

Compact design is well illustrated in the new KINNEY KDH-65 single stage Pump shown at the left. This Pump, with 3 hp motor and free air displacement of 65 cfm attains ultimate pressures to 10 microns. This same Pump, with 5 hp motor, provides free air displacement of 80 cfm and attains the same ultimate pressure as the KDH-65. Product development of this sort marks the entire KINNEY Pump line, assuring for you ever higher standards of pumping economy and smooth performance.

THERMOCOUPLE GAGE FEATURES NEW COMPENSATED TUBE

This new gage spans the range from 3000 microns to 1 micron with accuracy of $\pm 10\%$ at mid-scale. It is available in 3 models covering 1 to 6 stations. No need for "matching" tubes... you can change a tube among a number of tubes in one circuit, as well as from circuit to circuit. Descriptive bulletin on request.



Complete your file of latest information on advanced KINNEY High Vacuum Equipment... Single Stage, Two Stage and Mechanical Booster Pumps—Oil Diffusion Pumps—Cold Traps—Vacuum Valves—Valves and Baffles—Packaged Pumping Systems—Power Units—Evaporators—Furnaces—Ovens—Crystal Growing and Purifying Units—Hermetic Sealers—Vacuum Accessories.

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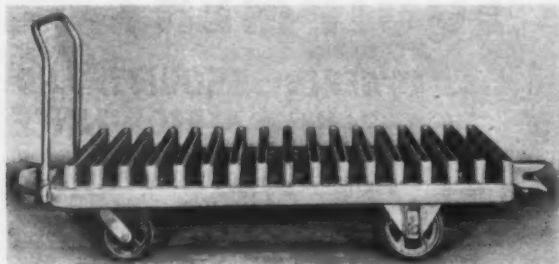
NEW EQUIPMENT

FOR WESTERN PLANT OPERATION, PRODUCTION AND MAINTENANCE



USE RIP OUT POSTCARD, PAGE 73, FOR MORE INFORMATION ON PRODUCTS DESCRIBED

TRAILER WITH RIBBED DECK
... for handling stock without pallets

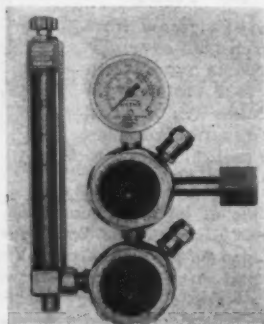


This trailer's ribbed deck permits lift trucks to enter warehouses, move, and handle stock of various dimensions without use of pallets. Designed to customer requirements, the units have handles for individual operation and hitching devices for use in trains hauled by truck. There are two swivel and two stationary wheels with rubber tires. *Palmer-Shile Co.*

... FOR MORE DETAILS, CIRCLE NO. 250

FLOW METER REGULATORS
... for accurate measuring in shielded inert gas welding

Secret of this flow meter's accuracy lies in the extra long meter tube and unique center guide for the ball float that eliminates bouncing of the device. The gas-saving design combines special two-stage Econoflo regulators with separate direct-reading flow meters for argon and helium. Constancy is a key feature of the regulator, which will hold pressure setting accurately from full cylinder to



50-75 lb. inlet pressure. *Smith Welding Equipment Corp.*

... FOR MORE DETAILS, CIRCLE NO. 251

DUAL-MOTORED VIBRATOR
... geared for synchronous action

Operating on a rotating eccentric weight principle this vibrator features adjustable eccentrics permitting force of vibration to be varied without changing weights. Variable impact range is from 640 to 2,200 lb.; any impact change can be made in minutes. It's practically noiseless, ideal for heavy duty applications requiring continuous flow of weight bulk materials. *Cleveland Vibrator Co.*

... FOR MORE DETAILS, CIRCLE NO. 252

NEW SPRAY PAINTING SYSTEM
... requires no atomizing air

Hydraulic pressure alone atomizes the material in this Dyna-Spray system, a simple trouble-free method that requires no heating of the material. Less material is used because the spray pattern puts material where it belongs, cuts overspray and bounceback. The method reduces the amount of material in the atmosphere and generally eliminates need for extensive ventilation. Four nozzles are included, offer-



ing spray angles from 15-80 deg. *Lincoln Engineering Co.*

... FOR MORE DETAILS, CIRCLE NO. 253

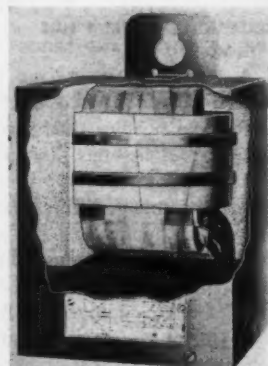
METAL-CUTTING SHEARS
... with blade powered by a single hydraulic cylinder

In this new line of hydraulically operated shears the blade is pivoted and turns in a curved path. Cylinder applies constant force by means of a cross shaft that links piston rod to the two ends of the blade. Use of one cylinder simplifies hydraulic circuit and also provides a second, higher speed for lighter thicknesses. Suited for use by inexperienced operators, the shears come in a complete range of sizes for cutting lengths to 30 ft., for all thicknesses from light gage to two inches. *Steelwell Machinery Div., The Cleveland Crane & Engineering Co.*

... FOR MORE DETAILS, CIRCLE NO. 254

DRY-TYPE DISTRIBUTION TRANSFORMERS
... feature quiet operation, small size

These epoxy compound filled dry-type distribution transformers are built in single-phase ratings 1 through 10 kva., 600 v. and below. Use of sound-deadening insulation eliminates need for metal framework and subassemblies subject to vibration. Quiet and compact, the units are lightweight, require no fireproof vaults, can be mounted in any position on wall, floor or ceiling. *Wagner Electric Corp.*



... FOR MORE DETAILS, CIRCLE NO. 255

CIRCLE THE NUMBERS
FOR ITEMS WANTED

Free data and liter-
ature on equipment, mater-
ials, methods and services
described or advertised in
WESTERN INDUSTRY.

western
industry

CIRCLE THE NUMBERS
FOR ITEMS WANTED

• Please send me the following:

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| 1 | 28 | 55 | 82 | 109 | 136 | 163 | 190 | 217 | 244 | 271 | 298 | 325 |
| 2 | 29 | 56 | 83 | 110 | 137 | 164 | 191 | 218 | 245 | 272 | 299 | 326 |
| 3 | 30 | 57 | 84 | 111 | 138 | 165 | 192 | 219 | 246 | 273 | 300 | 327 |
| 4 | 31 | 58 | 85 | 112 | 139 | 166 | 193 | 220 | 247 | 274 | 301 | 328 |
| 5 | 32 | 59 | 86 | 113 | 140 | 167 | 194 | 221 | 248 | 275 | 302 | 329 |
| 6 | 33 | 60 | 87 | 114 | 141 | 168 | 195 | 222 | 249 | 276 | 303 | 330 |
| 7 | 34 | 61 | 88 | 115 | 142 | 169 | 196 | 223 | 250 | 277 | 304 | 331 |
| 8 | 35 | 62 | 89 | 116 | 143 | 170 | 197 | 224 | 251 | 278 | 305 | 332 |
| 9 | 36 | 63 | 90 | 117 | 144 | 171 | 198 | 225 | 252 | 279 | 306 | 333 |
| 10 | 37 | 64 | 91 | 118 | 145 | 172 | 199 | 226 | 253 | 280 | 307 | 334 |
| 11 | 38 | 65 | 92 | 119 | 146 | 173 | 200 | 227 | 254 | 281 | 308 | 335 |
| 12 | 39 | 66 | 93 | 120 | 147 | 174 | 201 | 228 | 255 | 282 | 309 | 336 |
| 13 | 40 | 67 | 94 | 121 | 148 | 175 | 202 | 229 | 256 | 283 | 310 | 337 |
| 14 | 41 | 68 | 95 | 122 | 149 | 176 | 203 | 230 | 257 | 284 | 311 | 338 |
| 15 | 42 | 69 | 96 | 123 | 150 | 177 | 204 | 231 | 258 | 285 | 312 | 339 |
| 16 | 43 | 70 | 97 | 124 | 151 | 178 | 205 | 232 | 259 | 286 | 313 | 340 |
| 17 | 44 | 71 | 98 | 125 | 152 | 179 | 206 | 233 | 260 | 287 | 314 | 341 |
| 18 | 45 | 72 | 99 | 126 | 153 | 180 | 207 | 234 | 261 | 288 | 315 | 342 |
| 19 | 46 | 73 | 100 | 127 | 154 | 181 | 208 | 235 | 262 | 289 | 316 | 343 |
| 20 | 47 | 74 | 101 | 128 | 155 | 182 | 209 | 236 | 263 | 290 | 317 | 344 |
| 21 | 48 | 75 | 102 | 129 | 156 | 183 | 210 | 237 | 264 | 291 | 318 | 345 |
| 22 | 49 | 76 | 103 | 130 | 157 | 184 | 211 | 238 | 265 | 292 | 319 | 346 |
| 23 | 50 | 77 | 104 | 131 | 158 | 185 | 212 | 239 | 266 | 293 | 320 | 347 |
| 24 | 51 | 78 | 105 | 132 | 159 | 186 | 213 | 240 | 267 | 294 | 321 | 348 |
| 25 | 52 | 79 | 106 | 133 | 160 | 187 | 214 | 241 | 268 | 295 | 322 | 349 |
| 26 | 53 | 80 | 107 | 134 | 161 | 188 | 215 | 242 | 269 | 296 | 323 | 350 |
| 27 | 54 | 81 | 108 | 135 | 162 | 189 | 216 | 243 | 270 | 297 | 324 | 351 |

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| 1 | 28 | 55 | 82 | 109 | 136 | 163 | 190 | 217 | 244 | 271 | 298 | 325 |
| 2 | 29 | 56 | 83 | 110 | 137 | 164 | 191 | 218 | 245 | 272 | 299 | 326 |
| 3 | 30 | 57 | 84 | 111 | 138 | 165 | 192 | 219 | 246 | 273 | 300 | 327 |
| 4 | 31 | 58 | 85 | 112 | 139 | 166 | 193 | 220 | 247 | 274 | 301 | 328 |
| 5 | 32 | 59 | 86 | 113 | 140 | 167 | 194 | 221 | 248 | 275 | 302 | 329 |
| 6 | 33 | 60 | 87 | 114 | 141 | 168 | 195 | 222 | 249 | 276 | 303 | 330 |
| 7 | 34 | 61 | 88 | 115 | 142 | 169 | 196 | 223 | 250 | 277 | 304 | 331 |
| 8 | 35 | 62 | 89 | 116 | 143 | 170 | 197 | 224 | 251 | 278 | 305 | 332 |
| 9 | 36 | 63 | 90 | 117 | 144 | 171 | 198 | 225 | 252 | 279 | 306 | 333 |
| 10 | 37 | 64 | 91 | 118 | 145 | 172 | 199 | 226 | 253 | 280 | 307 | 334 |
| 11 | 38 | 65 | 92 | 119 | 146 | 173 | 200 | 227 | 254 | 281 | 308 | 335 |
| 12 | 39 | 66 | 93 | 120 | 147 | 174 | 201 | 228 | 255 | 282 | 309 | 336 |
| 13 | 40 | 67 | 94 | 121 | 148 | 175 | 202 | 229 | 256 | 283 | 310 | 337 |
| 14 | 41 | 68 | 95 | 122 | 149 | 176 | 203 | 230 | 257 | 284 | 311 | 338 |
| 15 | 42 | 69 | 96 | 123 | 150 | 177 | 204 | 231 | 258 | 285 | 312 | 339 |
| 16 | 43 | 70 | 97 | 124 | 151 | 178 | 205 | 232 | 259 | 286 | 313 | 340 |
| 17 | 44 | 71 | 98 | 125 | 152 | 179 | 206 | 233 | 260 | 287 | 314 | 341 |
| 18 | 45 | 72 | 99 | 126 | 153 | 180 | 207 | 234 | 261 | 288 | 315 | 342 |
| 19 | 46 | 73 | 100 | 127 | 154 | 181 | 208 | 235 | 262 | 289 | 316 | 343 |
| 20 | 47 | 74 | 101 | 128 | 155 | 182 | 209 | 236 | 263 | 290 | 317 | 344 |
| 21 | 48 | 75 | 102 | 129 | 156 | 183 | 210 | 237 | 264 | 291 | 318 | 345 |
| 22 | 49 | 76 | 103 | 130 | 157 | 184 | 211 | 238 | 265 | 292 | 319 | 346 |
| 23 | 50 | 77 | 104 | 131 | 158 | 185 | 212 | 239 | 266 | 293 | 320 | 347 |
| 24 | 51 | 78 | 105 | 132 | 159 | 186 | 213 | 240 | 267 | 294 | 321 | 348 |
| 25 | 52 | 79 | 106 | 133 | 160 | 187 | 214 | 241 | 268 | 295 | 322 | 349 |
| 26 | 53 | 80 | 107 | 134 | 161 | 188 | 215 | 242 | 269 | 296 | 323 | 350 |
| 27 | 54 | 81 | 108 | 135 | 162 | 189 | 216 | 243 | 270 | 297 | 324 | 351 |

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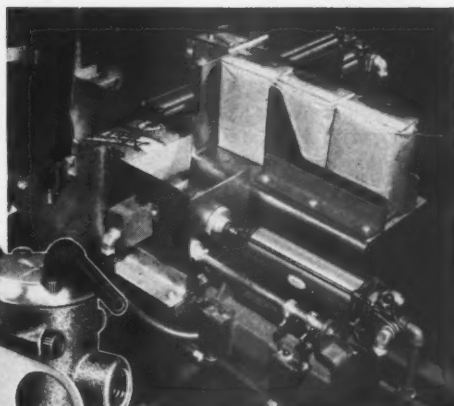
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Packaging coffee is simplified by this Bellows Air Motor powered equipment.

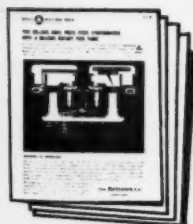
**...you can build special machines
...or modernize existing machines
at low cost and quickly!**

With parts normally available in every tool room, plus one or more Bellows Air Motors, and a little creative ingenuity, you can "spot modernize" scores of operations whose high cost whittles away at profits. The few illustrated here are typical of hundreds we can show you. The chances are good that no matter what you make, nor how you make it, this versatile air cylinder, with its built-in electrically controlled valve, can lend a mighty important helping hand to your cost reduction program.



Bellows Air Motors fill ice cream, add nuts and fudge, fold and seal the wrapper in this special machine.

**THIS FREE "SPOT-A-MATION FILE" MAY SPARK
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A note on your letterhead addressed to Dept. WI-1059, The Bellows Company of California, Glendale 1, California will bring you basic data: wiring diagrams, installation details, equipment list, on a score of "everyday" operations almost every industry uses—and if you wish, the services of a Bellows Field Engineer, to help you adapt those ideas to your specific needs.

1313-B-2

The Bellows Co.

OF CALIFORNIA

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Tail stock, tool bit, and cross-slide are moved by Bellows Air Motors in this lathe conversion.

OTHER INDUSTRIAL DIVISIONS OF IBEC: Sinclair-Collins Valve Co., Valvair, Akron, Ohio • V. D. Anderson Co., Cleveland, Ohio
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NEOPRENE RUBBER-BASED COATING

... protects metal, wood, concrete, cloth, plastics

Excellent chemical and abrasion resistance are provided by this general-purpose one-part coating that can be applied without a special primer, needs no accelerator or catalyst for curing. Its gel-type consistency permits application by brush without need of diluting or stirring. Even when applied to vertical surfaces it will not sag or flow. On most applications only one or two coats are required for proper thickness and necessary protection. *Abrasives and Coatings Div., Minnesota Mining & Manufacturing Co.*

... FOR MORE DETAILS, CIRCLE NO. 256

CHARGE CONTROL UNIT

... helps extend life of motive power batteries

By providing proper charge control this new automatic unit prolongs high capacity working life of electric industrial truck batteries and also eliminates danger of overcharging. For control of both daily and weekly charges, it requires no attendance or resetting, and can be readily mounted vertically on the charger or on a wall. *Exide Industrial Div.,*



The Electric Storage Battery Co.

... FOR MORE DETAILS, CIRCLE NO. 257

CLOSED CIRCUIT TV CAMERAS, MONITORS

... five types of cameras and two monitors

First entrance for this firm into the industrial/educational TV field, this line includes a basic general purpose camera that provides 550-600 lines horizontal resolution. Measuring 5½ x 7 x 11 in., it weighs 12 lb.; puts out a one-volt video signal into a 75 ohm. coaxial cable; uses a 16mm C lens mount, and can accommodate a remote control four lens turret. The monitor has a 14-in. screen, provides high brightness, excellent stability. The second monitor is a 21-in. receiver. *Motorola, Inc.*

... FOR MORE DETAILS, CIRCLE NO. 258

TELESCOPIC LIFT TRUCK

... for outside and inside material handling

This all-purpose 1,000-lb. battery-hydraulic truck comes with pneumatic tires, offers telescopic lifting to 110 in. It provides a low-door clearance of 78 in., which permits convenient transportation of loads in and out of the plant, and travels well fully loaded over rough surface. Called the Yardmaster 29, it has a heavy-duty 12-v. industrial system, rugged construction and complete bearing con-



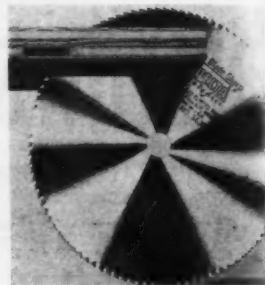
... control throughout. *Big Joe Manufacturing Co.*

... FOR MORE DETAILS, CIRCLE NO. 259

PLYWOOD CUTTING BLADE

... eliminates chipping, shattering or splintering

The 200 small teeth of this blade, striking the wood in rapid succession, cut veneer fibers instead of chipping or splintering them as other types sometimes do. The new low-cost blade, particularly useful in cutting thin wood veneers, has a 7-in. diameter and a 4/8-in. arbor hole. Made for 8-, 9- and 10-in. saws, its smaller diameter increases cutting



... speed. *Delta Power Tool Div., Rockwell Mfg. Co.*

... FOR MORE DETAILS, CIRCLE NO. 260

FRICTION SURFACE CONVEYOR BELTING

... low-cost, high-quality for tough operating conditions

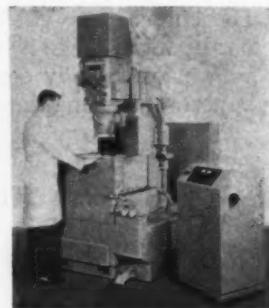
Designed to operate better and longer on jobs where other friction surfaces—woven duck or stitched canvas belting—is currently employed, this new type also offers better service at low cost on jobs where transmission belting is used. Fabric is full-strength cotton duck, used with highest grade rubber frictions uncommon in this belting's price range. It comes in three or four-ply and its non-staining surface is bright orange. Well-suited to package conveyors, it's equally usable for slider bed service or as a drive belt on live roller conveyors. *United States Rubber Co.*

... FOR MORE DETAILS, CIRCLE NO. 261

ELECTRICAL DISCHARGE MACHINE

... for tool sharpening, surfacing, forming, die making

This new machine removes metal by electric sparks. The machined area is submerged in dielectric fluid to quench sparks and flush out metal debris. The machine can be used where conventional machining creates problems of distortion, burrs and differential heating, and for materials too hard or too brittle for machining by other means. Manufactured by Cincinnati



Milling Machine Co., distributed by Harron Rickard and McCone.

... FOR MORE DETAILS, CIRCLE NO. 262

COATING COMPOUND IN ALUMINUM

... reflective and decorative for roofs, bridges, tanks, etc.

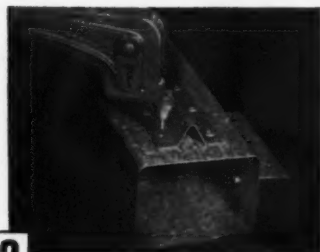
This non-flammable asphalt emulsion coating compound in aluminum color will not flow in hot weather; stain, alligator, or crack over any type of asphalt sub-surface. Called "Aluminized Static" it is said to outlast all other known forms of bituminous coating when exposed to weather. It's easily applied, dries fast, maintains brilliance for a long time, is self-priming and will adhere to metal, glass, masonry rock or asphalt covered surfaces (i.e. old built up or shingle roofs, corrugated metals, etc.). *Flintkote Co.*

... FOR MORE DETAILS, CIRCLE NO. 263

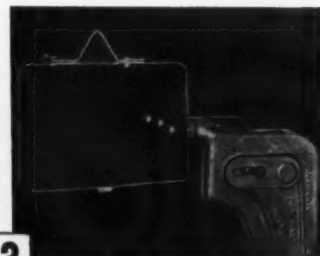
"POP" RIVETING ...is as easy as-



1 SIMPLY INSERT THE "POP"® RIVET INTO THE RIVET GUN. Hand operated or power guns are available depending upon your needs. "POP" Rivets can be used to fasten all materials ... metals to metals, metals to plastics, and plastics to plastics.



2 INSERT THE RIVET IN THE PRE-DRILLED HOLE. Bring the rivet to the work ... not the work to the fastener. No lock washers or jam nuts are required. **INSTALLED COSTS ARE LESS** than any other type of fastener requiring a pre-drilled hole.



3 AND SQUEEZE. The "POP" rivet "pops" into place. Being a hollow "blind" rivet, the "POP" Rivet clinches from the head side only ... you can place the rivet anywhere ... even in those hidden areas because "back-up or bucking" is eliminated.

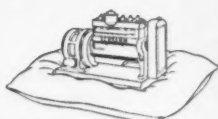
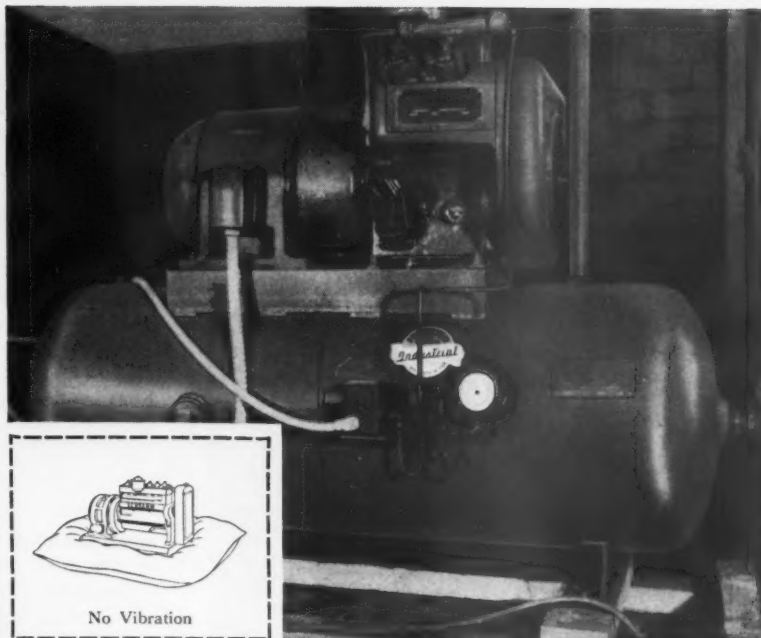
HUGE INVENTORY AND SERVICE CENTER
The Universal Molding Company maintains a very complete stock of sizes and styles of "POP" Rivets and "POP" Rivet tooling. In addition, Universal also offers the only "POP" Rivet service repair in Southern California.

Phone or write for complete information. A Service Engineer will be happy to demonstrate the many uses of "POP" Rivets anywhere in Southern California.

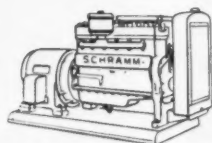
*Trade Mark—Manufactured by United Shoe Machinery Corp.

Universal
MOLDING COMPANY
10807 Stanford Avenue
Lynwood, Calif. NEvada 6-9721

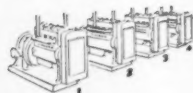
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No Vibration



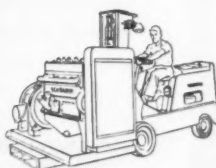
Compact



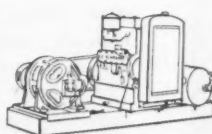
Unit System



No Elaborate Foundations



Easy to Move



Complete Package

NO VIBRATION!

Schramm vibration-free compressors eliminate costly foundations

Balanced reciprocating parts will give vibrationless operation, lengthen compressor life. Any floor space will serve as a base—no need for special foundations. Schramm compressors don't even have to be fastened to the floor! And they're easier on your building, too.

Easy to move—change the location of your compressor whenever you need. Complete Package—all you need for your air requirements in a single package.

No elaborate foundation—eliminate this added cost with a vibration-free Schramm installation.

Compact—takes less space—put your Schramm compressor anywhere—take advantage of unused corners.

Unit System—use only as many compressors as you need now, expand your installation as required.

For complete information, write for Catalogs GC-57 and 5510, or see your nearest Schramm Dealer.

Schramm, Inc.

MANUFACTURERS OF AIR COMPRESSORS

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& Jefferson Sts., Oakland 12, Calif. HIgate 4-3982

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PLUS 24874
MINUS 35071

**ASSEMBLY
MAINTENANCE
PRODUCTION**

HIGH TEMPERATURE ANTI-SEIZE
No heat freeze, Temp. range -350°F to +2987°F
MEETS GOVERNMENT SPECIFICATIONS
MIL-A-907 QPL-907

NO GALLING OR SEIZING recommended for aluminum, stainless, titanium, plastic, steel, brass, etc.
HIGH PRESSURE SEALANT a real thread sealer, pressures held to 50,000 psi hydraulic fluids, 3500 psi air, 1000 psi gases. Has UL approval. For gases, steam, air, ammonia, hydraulic fluids.
CORROSION PROTECTION no corrosion weld, prevents rusting, acid-etch, etc.

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MIL-A-13881
SPEC. OXYGEN SEAL
NAVORD OSTD-53
CUSTOM COMPOUNDING

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LONG TUBULAR RIVETS
(up to 7 inches)

SHOULDER RIVETS

"AN" RIVETS

**FAST SHIPMENT • LOW COST
LONG OR SHORT RUNS**

ANY METAL including MONEL • INCONEL
STAINLESS STEEL • BRASS • COPPER

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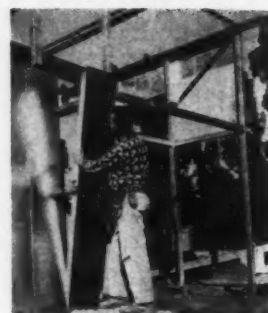
CALIFORNIA & ARIZONA—H. Blake Smith, Box 277, Bona Park, California, Lawrence 2-1805. WASHINGTON & OREGON—D. H. Landon & Co., 5501 University Way, Seattle 5, Washington, Lakeside 5-4997.

... for more details, circle No. 45 on Reader Service Postcard

MODULAR STEEL BUILDINGS

... for low-cost, quickly-erected plant facilities

A typical unit of these durable structures incorporates a curtain-type double steel wall panel 3.5 in. thick, but equal in insulating value to a 12-in. masonry wall. External walls are heavy gage galvanized steel sheet with stiffeners at 16-in. centers; internal panels are lighter gage with interlocking joints at 32-in. centers. Roof is a standing seam steel deck with a 12-ft. clear



span. Calcor Corp.

... FOR MORE DETAILS, CIRCLE NO. 264

INDEX-TYPE CASE VERTICAL CONVEYOR

... automatically handles packages at up to 20 cases per min.

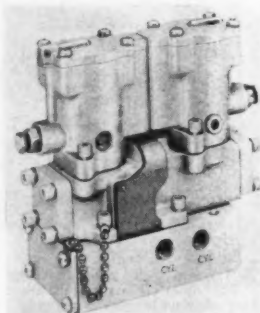
Designed to handle either one or two packages per carrier at a vertical speed of 90 ft. per min., this conveyor permits handling of a wide variety of packages from 10-15½ in. wide, 12-36 in. long, 7-15 in. high, and up to 180 lb. per carrier. Removable lightweight protective enclosure sections, equally-spaced hinged doors, and simple construction are other features of the conveyor, which occupies only 4 x 4 ft. of floor space, plus 2¼ x 2 ft. for automatic feed belt. Alvey Conveyor Mfg. Co.

... FOR MORE DETAILS, CIRCLE NO. 265

PLUG-IN TYPE CONTROL VALVES

... with one-piece solenoid pilot housings

These ¼-in. pilot-operated control valves, with weight-saving aluminum bodies and sub-bases, are offered in single and double-solenoid types, for sub-base or multiple manifold mounting. Compact size, very fast operating response, multi-million cycle dependability and low cost are among advantages. The plug-in design is said to reduce installation and maintenance costs, as well as machine down-



time, to a minimum. Valvair Corp.

... FOR MORE DETAILS, CIRCLE NO. 266

MECHANICAL DRIVE DRYERS

... both direct and indirect, with variable-amplitude drive

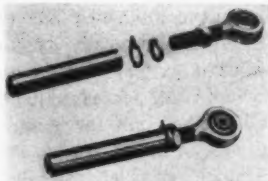
Adjustment of speed of travel and depth of material as desired is provided in this new line of dryers for use in either drying or cooling. The direct type carries granular material (range-¼ in. to 60 mesh) on a stainless steel conveying surface through which drying air or gas is passed. The indirect carries very fine material on a solid plate conveying surface, heated from below by steam or heated air. The Jeffrey Mfg. Co.

... FOR MORE DETAILS, CIRCLE NO. 267

POSITIVE INDEXING LOCKING DEVICE

... permits precise adjustment of aircraft control linkage

Two mating washers whose serrations provide positive indexing comprise this device that permits precise linear and angular adjustments of such components as aircraft control linkage and cylinder rod ends to within 0.001 of an inch. Made by investment casting, the device has outperformed previously used washers, plus providing greater



thread protection. Sizes range from .260 in. I.D. and .44 in. O.D., up to 2.265 in. I.D., and 2.88 in. O.D. *Arwood Precision Casting Corp.*

... FOR MORE DETAILS, CIRCLE NO. 268

QUICK-OPENING BOLT THREADER

... speeds all power drive bolt threading

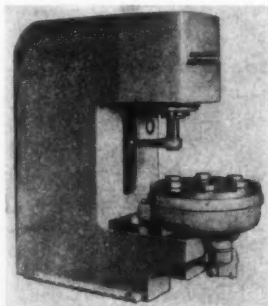
A set of 4 full-width dies of desired size are easily inserted in the die head of this bolt threader, which requires just one head for 10 sizes of bolt dies. Loosening of locking lever gives quick, fool-proof setting of easy-to-read size bar for standard, over or undersized thread. Cam-action workholder is set to snug fit after threader has been placed on bolt; because threader can't wobble you get true threads every time. *The Ridge Tool Co.*

... FOR MORE DETAILS, CIRCLE NO. 269

NEW MULTIPRESS LINE

... self-contained bench units in capacities from 4-12 tons

A more rigid frame, larger bed area and more knee room are features of these new Series T Multipresses available with manual or automatic controls. The unit has an easily accessible relief valve, a newly designed cylinder for faster operating speed and a quick-adjusting inch and stroke change control. For use with 6 or 12 station indexing tables, the presses' height is 52½ in., without



bench; weight is about 1,800 lb. *Denison Engineering Div., American Brake Shoe Co.*

... FOR MORE DETAILS, CIRCLE NO. 270

DRY TYPE SPRAY BOOTHS

... several types, all of 18-gage sheet steel section

Offered as standard equipment, a new line of dry type spray booths include filter and baffle floor types, filter bench and baffle bench booths. An auto spray, a truck spray and a combination of the two are also available. Outside panel section flanges leave the inside smooth and are easily bolted together during erection. All can be equipped with paint arrestor filters. *Binks Manufacturing Co.*

... FOR MORE DETAILS, CIRCLE NO. 271

4 do the work of 6



MANY SAVINGS ... Sheaves can be smaller, lighter, the drive more compact, and belting costs sharply reduced by the use of today's Dickrope "QD" V-Belt Drives. Reduced initial costs ... increased belt life ... savings on maintenance and space.

"TEMPERED" CONSTRUCTION ... a pacesetting advance that increases belt h.p. rating 40%, minimizes stretch, increases resistance to abrasion and shock, adds flexibility. Smooth vibration-free operation is assured by freedom from surface irregularities and by the Dick "QD" sheave ... precision made, tight fitting, easily installed and removed.

Prompt, off-the-shelf delivery of belting and sheaves to meet practically every drive requirement.

NEW ... A Necessary Reference Manual

Send coupon for our new "Engineering Manual — Dickrope 'QD' V-Belt Drives" ... the most complete and up-to-date in the field.



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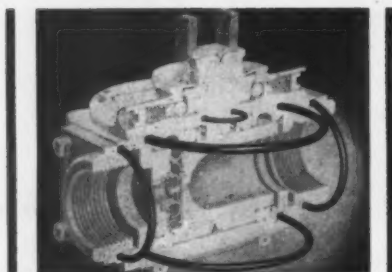
Without charge or obligation to me, please send a copy of your new "Engineering Manual — Dickrope 'QD' V-Belt Drives."

Name

Position

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FOR PROMPT DELIVERY

For long service, leakproof O-rings, precision-molded from superior synthetic compounds, be sure you use PARKER O-rings. We can supply your needs quickly. Call or write us today.

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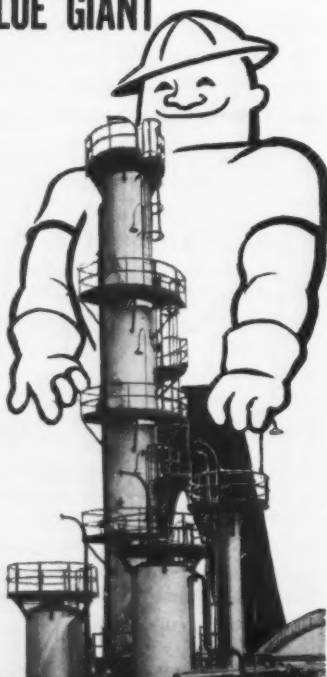
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For 48 years National Tank & Manufacturing Co. has taken pride in the design, engineering, and manufacturing of quality tanks.

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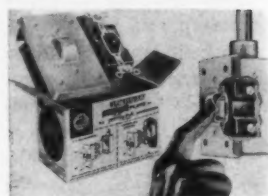
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TANK & MANUFACTURING CO.
P.O. BOX 71738 • LOS ANGELES 1, CALIFORNIA

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78

WEATHERPROOF PLATE FOR SWITCHES ... dependable combination for outdoor use

This combination of an Insulprene protective plate with a Pressswitch a-c. switch is considered an ideal all-weather unit for a multitude of outdoor uses. Though completely sealed in, the switch can be operated at any time by pressing the plate's raised surface where indicated. There are no covers to lift, no caps to pull off or unscrew. The package unit comes in 15



or 20 amp., 120-277-v. ratings in single pole, double pole, three-way and four-way units. *Harvey Hubbell, Inc.*

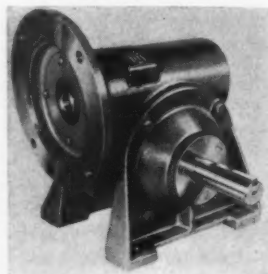
... FOR MORE DETAILS, CIRCLE NO. 272

HYDRAULIC LIFT TABLE ... self-contained unit, lift speed of 2 in. per sec.

This hydraulic lift table for the material handling and plywood industries is 40 in. wide and 76 in. long, with lifting height of 43 in. It collapses to a slim 9 in. in a fraction of the time normally required. One outstanding feature is that the complete material load is lifted at the center of lift—stress on the cross arms is nil. Side supports brace the load, giving it more rigidity with less wear on the unit. According to the manufacturer, the lift will carry 5,000 lb. plus an overload factor, and has very few moving parts. A self-contained unit, easy and safe to operate, it is adaptable for automation, is controlled by a 3-way electric solenoid switch with foot or button control, and has a lift speed of 2 in. per second. *United Products Co.*

... FOR MORE DETAILS, CIRCLE NO. 273

SPEED REDUCER ... with gear ratios from 4:1 to 90:1



Designed to accept NEMA Type C face-mounted motors suitable for 1/20 through 1½ horsepower, this unit is furnished in three sizes. Gear ratio range depends on horsepower. Reducers can be supplied with or without motors. *Janette Electric Mfg. Co.*

... FOR MORE DETAILS, CIRCLE NO. 274

STACKING STRADDLE CARRIER ... for carrying and tying freight containers

This new Van Carrier stacks cargo containers two high and is used in containerized freight shipping. With a capacity of 50,000 lb., it will handle containers 8 ft. high, 8 ft. wide, and 24 ft. long, and (with modifications) containers 4-9 ft. high and 8 to 40 ft. long. The Van Carrier can drive straddle-fashion over a string of railroad flat-cars to pick up and remove a container from a middle car. Containers also can be placed on or removed from flat-bed trucks and lifted from bottom or top through the hydraulic-mechanical lifting mechanism. *Industrial Truck Div., Clark Equipment Co.*

... FOR MORE DETAILS, CIRCLE NO. 275

WESTERN INDUSTRY/OCTOBER 1959

ACETAL RESIN SHEETS, RODS, TUBES

... for gears, bearings, other industrial parts

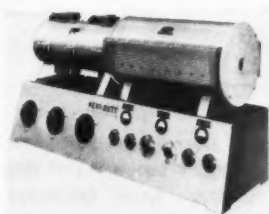
Sheets, rods and tubes of Delrin, DuPont's new acetal resin, now being made and distributed by a Western firm, are for use in rollers, slides, pump parts and similar uses for industrial and maintenance applications. The small diameter Delrin rod is already in stock. Molders and product designers are also expected to use the shapes for machining of prototypes. *Cadillac Plastic & Chemical Co.*

... FOR MORE DETAILS, CIRCLE NO. 276

TUBE FURNACES

... for transistor, semi-conductor industries

Several standard precision furnaces for the transistor and semiconductor industries have been successful in supplying exacting temperature requirements necessary in producing electronic components. Available in three maximum temperature ranges—1850-deg. F, 2200-deg. and 2600-deg., the furnaces obtain excellent uniformity through multiple zone heating. Saturable reactor con-



trols provide precise temperature selection. Furnaces can be shipped as complete units ready to attach to power source. *Hevi-Duty Electric Company.*

... FOR MORE DETAILS, CIRCLE NO. 277

VINYL FOAM EXTRUDED FORMS

... for packaging sensitive instruments

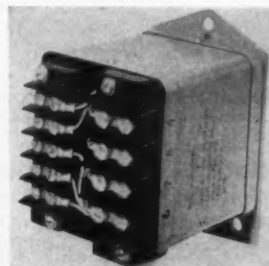
Extruded vinyl foam material in many shapes and colors is being produced for industry. The unique extrusions, a new development in plastics, will be particularly useful in packaging and sealing. They have been used in protective packaging, furniture, upholstery beading and permanent gasketing in operations such as dust seals for neon fixtures. Made from vinyl resin, the foam is strong, abrasion-resistant, flame-resistant and has a long heat-age life and non-rotting characteristics. The extrusions are available in round, continuous lengths in diameters of from 1/8 to 1 in. *B. F. Goodrich Chemical Co.*

... FOR MORE DETAILS, CIRCLE NO. 278

OVERTEMPERATURE RELAY DEVICE

... direct monitoring, for many a-c. applications

A magnetic relay, two transistor amplifiers, a diode network for signal separation and a voltage regulated power supply make up this direct monitoring device. Primarily to protect 3-phase a-c. motors, it's also suitable wherever overtemperature is a problem. It permits maximum use of equipment without overheating because it responds only to actual temperature of protected equipment since the



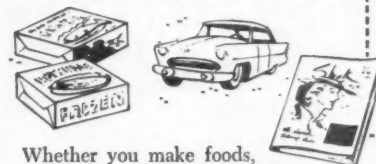
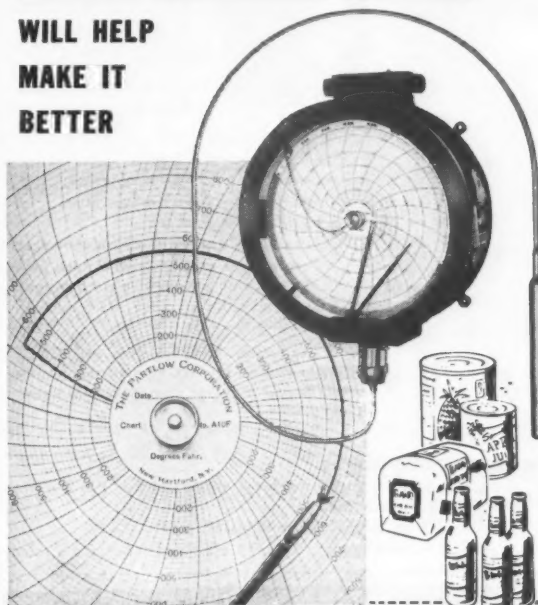
thermistor is inserted in the windings of the motor, generator or transformer. *Cutler-Hammer Inc.*

... FOR MORE DETAILS, CIRCLE NO. 279

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- Testing Machine Co.
- Wilson Mechanical Instrument and Helicoid Gage Divisions of American Chain & Cable Co.

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with Chain Guide

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- They fit any size valve wheel.
- They are easy to install and operate.
- They operate any valve from the floor.
- They save time and money.
- The first cost is the only cost (no maintenance).
- They are packed completely assembled (one to a carton), with easy-to-follow instructions.
- A hot-galvanized rust proof chain is available for all sizes.

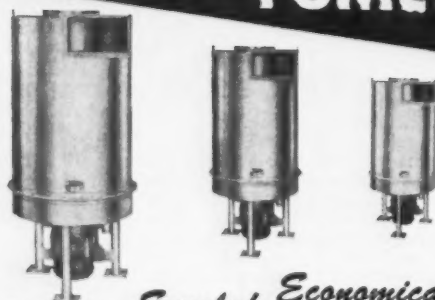
Babbitt Adjustable Sprocket Rims with Chain Guide are carried in stock by most mill supply houses. If your supplier does not carry them, contact us direct.

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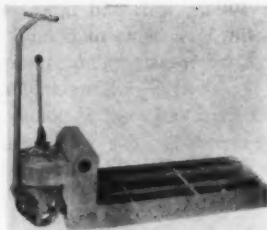
Los Angeles 21, Calif.

... for more details, circle No. 51 on Reader Service Postcard

SKID LIFT TRUCK

... 40% lighter than most models

Designed to cut down on operator fatigue at no loss in capacity, this new skid lift truck has a five-in. under-clearance in the raised position. Instead of moving in an arc, its deck moves up and down almost vertically so that a load can be dropped very close to a wall. Available in 2,500-lb. and 4,000-lb. capacities, it



weighs about 245 lb. A covered platform is optional. Colson Corp.

... FOR MORE DETAILS, CIRCLE NO. 280

HIGH SPEED COUNTER

... covering ground control missile and radar systems

A high speed miniature counter for requirements of small size and weight, low torque and low cost, covers altimeters and navigation instruments as well as marine aviation and computer components. It is an external pinion type with half-inch, non-reset nylon wheels displaying 1/8 in. white characters on black. Maximum torque is .010 oz.-in. at 25-deg. C. and speed is up to 1000 rpm. Of 1/4-oz. weight, it will meet aircraft instrument shock and vibration requirements. Veeder-Root, Inc.

... FOR MORE DETAILS, CIRCLE NO. 281

HOSE STRIPPING TOOL

... for use with vise, lathe chuck, drill press or assembly machine

This new tool is for removal of the outer rubber cover from high pressure hoses prior to assembling the fitting with a one-piece socket on Aeroquip hoses. Designed to speed up and greatly facilitate the operation, the tool is ruggedly made with a steel frame and mandrel and a specially hardened steel blade holder.



It's available for hose sizes -4 through -32, is assembled and preset for each particular size. Aeroquip Corp.

... FOR MORE DETAILS, CIRCLE NO. 282

NEW AUTOMATIC AIR HOSE COUPLING

... fastest, most efficient method for coupling air hoses

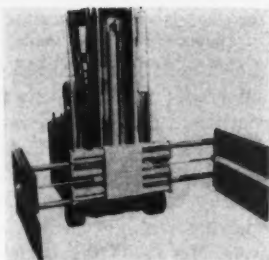
An automatic coupling device that provides a fast method for coupling and uncoupling air hoses is being offered for 1/4, 3/8, 1/2 and 3/4 in. I.D. hose. No tools are required; a push connects the plug, locking it in the socket regardless of air pressure, and a pull on the knurled sleeve disconnects it, shutting off air. A precision-fitted seal prevents leakage; the plug's swivel action prevents kinking of hose. Air passage through the new coupling is unrestricted, for maximum air flow and economical use of compressed air. Lincoln Engineering Co.

... FOR MORE DETAILS, CIRCLE NO. 283

SIDE SHIFT LOAD GRAB

... with multi-purpose arms

It's possible to handle almost any type of non-palletized load with use of this attachment. The arms eliminate necessity of using a different truck or changing arms when handling different types of loads. The arms will handle unit loads of drums, cartons, crates, bales, rolls, etc. Gripping surface of arms is either smooth or rough-top rubber bonded to



steel sheets screwed to the plates. Other types of surfacing are also available. *Lewis-Shepard Products, Inc.*

... FOR MORE DETAILS, CIRCLE NO. 284

MOMENTARY CONTACT AIR VALVES

... current applied only for instant it takes valve to change position

With a single solenoid 2-position 4-way valve, when solenoid is actuated by electric impulse, the solenoid plunger moves down actuating pilot valve which in turn operates main valve. Momentary contact device then "latches" pilot valve in this position, even after power is cut off. When impulse again energizes solenoid, plunger "unlatches" contact device, allowing pilot valve and main valve members to revert to normal position. Dual solenoid units for use in automated systems prevent valve from getting out of phase. *Barksdale Valves*

... FOR MORE DETAILS, CIRCLE NO. 285

LARGE CAPACITY PNEUMATIC MOTOR

... compact, piston-type for mounting in any position

Though this motor has a cylinder volume of only 26 cu. in., it provides 150 foot/pounds of torque and a 7-in. stroke. It's 75% smaller than the double diaphragm motor it replaces, can be mounted to control vortex dampers, inlet vanes of refrigeration compressors and large dampers. A positioning relay and a reverse relay make up a power package to power the unit. *The Powers Regulator Co.*

... FOR MORE DETAILS, CIRCLE NO. 286

COMPRESSED AIR PISTOL

... to solve all your de-rusting, cleaning, de-scaling problems

This lightweight pistol is versatile and economical, can handle any descaling job from a railway duct to a welding seam. Advantages cited for the device include no dust, no interference with production, no danger, no damage, no delays, no inaccessible points and no expensive maintenance. It ups production, improves work quality, cuts costs. Driven by air from any normal industrial type compressor, the pistol has a nor-



mal working pressure of 88 psi., with air consumption 12.5 cu. ft./min. *T. G. Cullen Co.*

... FOR MORE DETAILS, CIRCLE NO. 287

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82

600-AMP. SECONDARY CONTACTOR

... operates on 115 v., single phase 50 or 60-cycle current

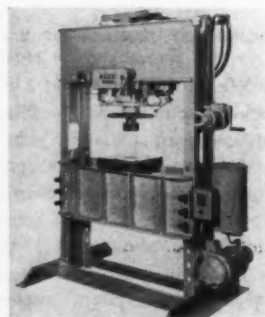
For use with any d-c. welding source to interrupt high amperage welding current, this secondary contactor is specifically designed as an auxiliary for Aircomatic (gas shield metal-arc) and Heliweld (tungsten-inert-gas) processes where power source employed does not have a primary contactor. Rated at 600 amp., it will effectively interrupt welding currents up to capacity at 100% duty cycle. *Air Reduction Pacific Co.*

... FOR MORE DETAILS, CIRCLE NO. 288

150-TON ELECTRIC HYDRAULIC PRESS

... for heavy-duty jobs

Designed for press-room work in maintenance shops, rolling mills, etc., this unit with its frame assembly of all-welded construction is rigid and has the ability to withstand much abuse. All corners have been coped and ground, and a pressure by-pass valve prevents overloading. The ram travel limit control and electrical operating control are other safety features. *American Chain and Cable Co.*



... FOR MORE DETAILS, CIRCLE NO. 289

SILICON CHARGER

... provides single shift charging for 24-v., 600 A. H. batteries

A hermetically sealed silicon rectifying element is used in this new charger for electric industrial trucks with 24-v. batteries. Simply operated, it provides protected charging, is convection-cooled and has no moving parts so it's virtually maintenance-free. It's furnished with 9 ft. of three-conductor a-c. cable and 6 ft. each of two single-conductor d-c. battery charging cables. Safety features protect both battery and charger. *C & D Batteries, Inc.*

... FOR MORE DETAILS, CIRCLE NO. 290

CRAB FORK LIFT TRUCK

... travels in any direction, at any angle, with any shaped load

The answer to unusual material handling problems, this Transveyor "Crab" truck can turn completely around in a 70-in. circle, will utilize space previously unused because conventional trucks could not maneuver loads into these confined areas. Bulky, odd-shaped loads can be carried across the forks and moved sideways down the aisle. One lever controls both swing



and reach features, thus reducing positioning of the truck. *Automatic Transportation Co., Div. of Yale & Towne Mfg. Co.*

... FOR MORE DETAILS, CIRCLE NO. 291

RUBBER ROLLS for ALL industries from the other* Goodyear

At present we manufacture rubber rolls for nearly every type of manufacturing industry, including paper, steel plate processing, graphic arts, tanneries and food processing. In general, these rolls have a tough job to perform and manufacturing them to function properly under specific and individual conditions requires experience and custom facilities. As one of our specialties, we are proud of our contribution in this field.

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Established 1872, we have no connection with the firm that manufactures automobile tires.



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TUBING

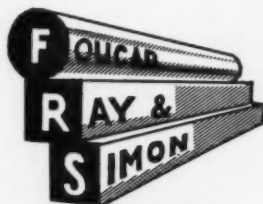
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WESTERN INDUSTRY/OCTOBER 1959

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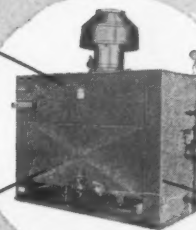
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WESTERN INDUSTRY/OCTOBER 1959



WESTERN INDUSTRY NEWS

THE INDUSTRIAL WEST . . . ON IT'S WAY

PLANTS • PRODUCTION • DISTRIBUTION • PERSONNEL

Arizona and Montana Steel Mills Scheduled

CLARKDALE, ARIZ.—Initial plans for a steel mill here and another in Anaconda, Mont. have been revealed by William Zeckendorf, real estate developer and financier. The plant here, to be the first integrated steel mill in Arizona, is to cost more than \$15,000,000.

Raw material for the two steel plants will be copper slag. The facilities are to be built by the Webb & Knapp Strategic Materials Corp., 85% of which is owned by Zeckendorff's Webb & Knapp, and 15% by Strategic Materials Corp. of Buffalo, N. Y., which has developed a process for reclaiming iron from copper slag.

For the project, Zeckendorff has purchased an entire ghost town with an abandoned copper smelter near here.

Litton Opens Tactical Systems Lab in Canoga Park

CANOGA PARK, CALIF.—Litton Industries held formal opening ceremonies recently for two buildings that house specialized research, development and manufacturing operations in military tactical systems.

Located at 6700 Eton Ave., on a seven-acre site, the new buildings comprise the first unit of Litton's plant expansion program in the San Fernando Valley. Some 500 persons are to be employed at the 100,000-sq. ft. facilities, part of the firm's Electronic Equipment Division.

New Mexico Zinc Company Resumes Operations

SILVER CITY, N. M.—The Empire Zinc Co., shut down for about 18 months because of a drop in the price of zinc, has resumed full scale operations of its properties in Hanover, near here.

Idaho Fertilizer Plant

KELLOGG, IDA.—Building plans for a multi-million dollar fertilizer plant here have been announced by The Bunker Hill Co.

Bliss & Laughlin May Build \$3,000,000 Western Factory

ORANGE, CALIF.—Construction plans for a \$3,000,000 plant here for Bliss & Laughlin, Inc. have been disclosed recently. Building of the facility, which will employ over 100 persons, is scheduled to start within a year.

Bliss & Laughlin, Harvey, Ill. produces cold-finished carbon and alloy steel bars.

Oxygen Products, Inc. Plans Portland Operation

PORTLAND—A new corporation, Oxygen Products, Inc., for manufacture and distribution of industrial gases, will build a plant at S. W. Moody Avenue and Gibbs St. here. The site adjoins the plant of Tube Forgings of America.

The million-dollar firm is headed by Emery Zidell, who said that a portion of the firm's production will be used by Tube Forgings and other Zidell Enterprises including Zidell Machinery & Supply Co. and Zidell Explorations, Inc.

In connection with the new plant, Tube Forgings, a welding fittings concern, will start production of seamless oxygen cylinders. Plans call for distribution of the new plant's liquid oxygen output through the three Northwest states.

Convair Plans \$4,000,000 Warehouse in San Diego

SAN DIEGO—Plans for construction of a \$4,000,000 warehouse by Convair-Astronautics here were revealed recently when a 24-acre site was rezoned for industrial uses. The 300,000-sq. ft. warehouse will be used to store material for production of the Atlas missile.

Utah Chemical Firm

SALT LAKE CITY—The newly-formed Amalgamated Chemical Co. has been incorporated, listing \$100,000 capitalization. The firm holds approximately 50,000 acres in potash permits in southeastern Utah and southwestern Colorado. N. G. Morgan, Sr., president, said.

Clarkston, Wash., to Get \$14,000,000 Unit

CLARKSTON, WASH.—Ideal Cement Co., Denver, has announced that it will build a \$14,000,000 plant near here as part of a \$21,000,000 expansion program. Construction on the facility, which will produce 1,500,000 barrels of cement yearly, is to begin next year, with production scheduled to start before the end of 1961.

Main source of raw materials will be a limestone quarry on the Snake River about 30 miles from here. Ideal also has options on limestone property above Slickpoo Mission, near Culdesac.

Equipment will include a rotary kiln 12 ft. in diameter and 450 ft. long, a large raw materials grinding mill, and a finish grinding mill.

Ideal, one of the nation's largest producers of Portland cement, has also scheduled a \$7,000,000 addition to its recently opened plant at Tijeras, N. M.

Tread Rubber Factory to be Built in Hawaii

HONOLULU—A tread rubber manufacturing plant to supply Hawaii's tire-recapping firms will be built here by Wisdom Rubber Manufacturing Co. of Honolulu and the Ratliff Rubber Co., Los Angeles.

Initial plans call for a 30,000-sq. ft. plant to cost about \$350,000. Additional area for other planned industrial rubber items will also be needed, reports indicate. Production is scheduled for late 1960.

David F. Wisdom, who has been in the tire business here for 20 years, heads the local firm.

Portland Truck Company to Build Idaho Plant

CALDWELL, IDA.—Newell Truck Equipment Co., Portland, will build a plant here, with construction scheduled to begin in mid-September, according to A. C. Garber, chairman of the industrial committee.

Ed Newell of Portland is president of the firm which manufactures hydraulic hoists and special custom-made dump truck bodies.

GEAR FOR INDUSTRY
THE Lufkin LINE
OIL FIELD PUMPING UNITS

VISIT TO CORN PONE COUNTRY VIA 707

I guess Labor Day caught most folks frantically putting on their last coat of sunburn, or just skimming along behind a purring outboard without a care in the world, and of course, nothing beats a bangup ending to the searing summer like a trip to Disneyland complete with kids, shin guards, and elbow pads.



V. J. Fawcett

But, for a weary group of Lufkin Gear peddlers, it was business as usual in answer to a home office (Lufkin, Texas) summons to attend a special Gear Conference Tuesday morning.

This hurried call went out to other comrades in Chicago, Cleveland, Houston, Tulsa, Effingham, and the guy from New York appeared with swim fins and snorkel. It has been very wet in Lufkin all summer and nobody snickers at snorkels any more. Besides, he didn't have time to dress.

As for me, there was no problem getting ready. I just laid down my paint brush and packed. While boarding American Airlines 707 for Dallas, ran into Jeannie Crain and Richard "Have Gun" Boone. Ran into celebrity Paul Huggins, formerly of Gulf Oil and gin rummy fame, at the Houston Petroleum Club, and Paul, looking in the pink, sends his best to all his Los Angeles friends.

About the 707's. Like Ed Trout said, they're as smooth as silk pants. Only it's hard to figure how they mix 103,000 lbs. of kerosene with 5,000 lbs. of de-mineralized water and get a total of 220,000 lbs. off the ground in 43 seconds. Must have good gears.

V. J. Fawcett

Lufkin FOUNDRY
& MACHINE COMPANY

... for more details, circle No. 59

86

Big Aggregate Facility Scheduled in Colorado

DENVER—Plans for construction of a multi-million dollar plant by Great Western Aggregates, Inc., to be located in the foothills between Golden and Boulder were announced recently.

The new plant will have a capacity of 300,000 cubic yards of Idealite annually. Idealite is a light-weight aggregate used in place of gravel in the mixing of concrete. Its use reduces the weight of concrete by one-third.

Officials of the company, a wholly owned subsidiary of Ideal Cement Co., said the plant will have a crushing and screening department with a capacity of 200 tons of shale per hour. Its kiln will be 12 feet in diameter and 240 feet in length.

Tapco Breaks Ground for \$2,000,000 Facility

ANAHEIM, CALIF.—Ground breaking ceremonies were held recently for the first section of a new plant for the Tapco Group of Thompson Ramo-Woodridge, Inc. Located on a \$2,000,000 48-acre site at East St. and Ball Road, the facility will be used for research, development and manu-

facture of aircraft and missile systems' hydraulic products and structural members.

The initial building program will cover about one-fourth of the site. Three buildings with about 120,000 sq. ft. of working space are scheduled for completion by early next year. Personnel will number about 400 at the start, expected to increase to 500 by 1961. Future expansion could cover a total of 1,500 employees, according to the company.

In addition to several Eastern plants, Tapco has facilities in Bell, North Long Beach and Inglewood, Calif., that will close with the opening of the new plant here.

\$250,000 Alcoa Expansion Slated at Wenatchee

WENATCHEE, WASH.—A \$250,000 expansion of its plant here has been announced by Aluminum Co. of America. The three-phase project includes two 50,000-lb. hot metal holding furnaces; a pig casting machine, a storage building and a 10,000-lb. capacity holding furnace for granulated ingot.

Montana Plywood Plant

MISSOULA, MONT.—Construction of a \$2,500,000 plywood plant here has been under consideration by Vancouver Plywood Co., Vancouver, Wash.



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... for more details, circle No. 60 on Reader Service Postcard

WESTERN INDUSTRY/OCTOBER 1959

Standard Oil May Build Alaskan Pipeline, Terminal

ANCHORAGE — Standard Oil Co. of California has revealed proposed plans for constructing a \$4,000,000 pipeline and tanker terminal project to move Alaska's first commercial oil production from the Swanson River Unit to tidewater.

The firm also intends to spend \$3,000,000 for exploration in this state next year and is currently drawing agreements for a unit operation in the Soldotna area.

Although the pipeline-terminal project will be carried out only if production and reserves of the Swanson River Unit field are sufficient to justify expenditures, R. G. Follis, board chairman, said the pipeline as presently conceived would be an eight-in. carrier 22 miles long. Terminal facilities would include a wharf for loading tanks and 240,000 bbls. of storage capacity.

Industrial Development Planned in San Rafael

SAN RAFAEL, CALIF.—Plans for a million-dollar industrial center on the 4½-acre site of the former San Rafael Airport have been announced by David Glazer, developer. A freight terminal for trucks, warehouses and factories to be leased to tenants are included in plans for the property which will be under development during the next three or four years.

A. O. Smith's Western Plant Shown For First Time

NEWARK, CALIF.—First showing of its Western production facilities here to sales representatives, area civic leaders and company employees took place recently at the new Permugas Division plant of the A. O. Smith Corporation.

The new facility for production of glass-lined water heaters began production in August.

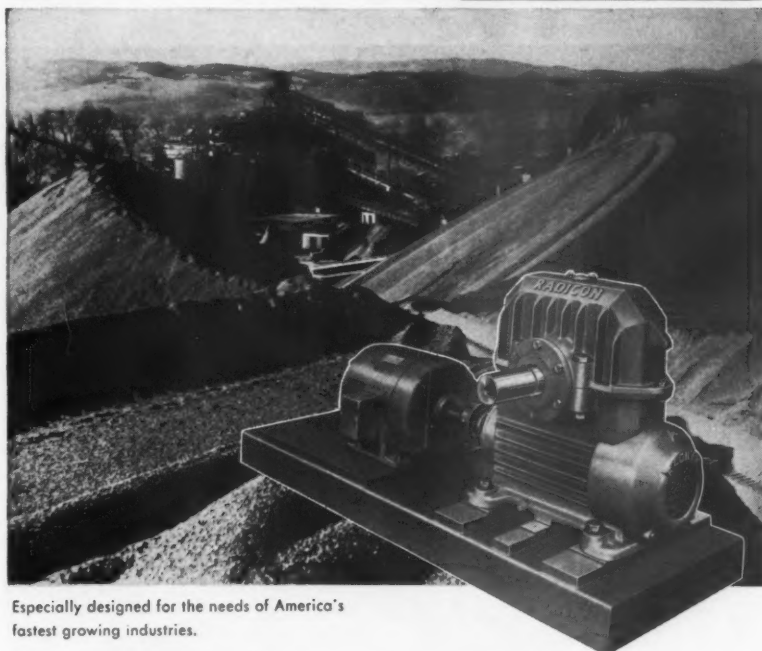
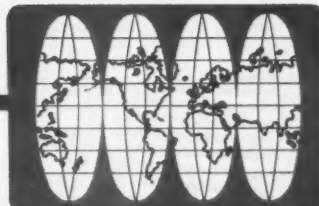
The 250,000-sq. ft. plant on a 21-acre site will function as a branch manufacturing operation of the main Permugas plant in Kankakee, Ill.

Air Conditioning Pipe Plant Scheduled for Stockton

STOCKTON—A plant for manufacture of spiral lockseam pipe and fittings for air-conditioning units is to be established here soon by United Sheet Metal Co., Columbus, O. The 20,000 sq. ft. facility at 1227 Bieghle will employ 30 persons initially, with an annual payroll of about \$240,000.

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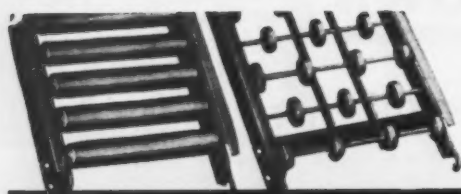
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Western Plants to Make New Building Material

LOS ANGELES — Announcement of a new building material and plans for two California plants to produce it was made here recently by the Plastics Division of Kopper Co., Inc.

The Division has licensed the Severin Construction Co., builders, to produce and distribute sandwich-type panels for home construction that are made with a core of Dylite polystyrene, Koppers' lightweight cellular material.

Formation of a new company, Dycor Products, Inc., to make and distribute the product was announced by Nels G. Severin, president of the construction company. The new firm will equip a plant here, with production scheduled early in 1960. Plans call for a facility of over 75,000 sq. ft., with initial employment of 75 persons.

A similar plant is to be built in the San Francisco area and others in the West may be erected later, Severin indicated. Special woodworking equipment and presses for permanent lamination of the panels will be equipment in the plants. Koppers is currently equipping a plant of this type in Detroit, Mich., to supply that area.

Automated Feed Plant Completed in Tillamook

TILLAMOOK, ORE. — Tillamook County Creamery Association has completed its new feed plant here, a facility with electronic devices, mechanized energy and high-speed equipment that can turn out two tons of feed every eight minutes.

Twice the size of the organization's previous mill, the plant has eight 50-ton steel storage tanks and 28 working bins for mixing and processing. The fire control system with automatic sprinklers is adapted to offer maximum dust control features.

Martin Co., Denver, Now Has Electronics Division

DENVER — Creation of an electronics division at the Martin Co. plant here has been announced by H. W. Merrill, vice president and general manager. G. Howard Teeter will direct operations of the new division.

The new set-up will add support to Martin's Titan missile program by concentrating on the higher performance and reliability required of electronic components and systems used therein. It will also participate in new electronic equipment areas.

Maintenance Exhibit in LA



Innovations in sanitation and maintenance are discussed by Carl Holmberg, left, of Minnesota Mining & Manufacturing Co., and Albert I. Mack, general manager of Easterday Supply Co.

LOS ANGELES—What's new in products, processes and equipment for maintenance and sanitation was displayed and discussed at the First Annual Sanitary and Maintenance Supply Exhibit held recently at the Los Angeles facility of Easterday Supply Co.

National manufacturers in the maintenance-sanitation field manned their booths in an area adjacent to the Easterday warehouse during the two-day show. A tour of the firm's facilities, a training film and demonstrations of products were highlights of the show attended by several hundred.

Shell Oil Begins Expansion Program in Portland

PORTLAND—A \$250,000 expansion program begun by Shell Oil Co. here includes additions to the automotive fleet shop; a storage tank for fuel for turbo-prop aircraft, another bay for the firm's light oil fillstand, and development of waterfront property for future expansions.

The program is underway at Shell's Willbridge Terminal facilities, and its property between Front Street and the Willamette River.

Holman Transfer Starts Warehouse in Portland

PORTLAND—Holman Transfer Co. is constructing a 100,000-sq. ft. warehouse in Milwaukie Industrial Park, first unit of a 7½-acre development planned in the area.

The warehouse is scheduled for completion in February and will include cold rooms, temperature and humidity control, and the latest equipment for material handling.

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Eitel-McCullough Enlarges Salt Lake City Facility

SALT LAKE CITY — Eitel-McCullough, Inc., is in the midst of a \$250,000 expansion program which will add to employment, research and production at the electronics tube plant, 1678 Pioneer Road, according to R. Wade Langley, plant manager.

Output here is now largely devoted to defense purposes, including a reflex klystron which finds applications in missiles.

Under erection currently are three separate buildings. Next spring.

EIMAC will open bids on a 10,000 sq. ft. dust-free environmental manufacturing structure, Langley said.

Haley Foods Completes \$350,000 Oregon Expansion

PORTLAND — A \$350,000 expansion of its plant at Hillsboro was completed recently by Haley's Foods, Inc. A new building and additions to the existing plant were included in the expansion, along with new equipment for producing canned foods and frozen meat products. Yearly output is now about 400,000 cases.

250 Attend Portland Wood Industries Meeting

PORTLAND — How to stretch the country's wood supply through improved forestry and better utilization was the subject that received emphasis in mid-September when some 250 industry scientists and research specialists met here for a three-day Wood Industries conference.

The meeting at the Multnomah Hotel was sponsored jointly by the regional chapters of the Forest Products Research Society, American Society of Mechanical Engineers and American Institute of Chemical Engineers.

Walter C. Ring of International Paper Co., H. A. McKeever of Weyerhaeuser Co., and Edward Clarke, U. S. Forest Service, Portland, were in charge of the conference.

New methods and equipment for end and edge gluing of lumber were discussed by John H. Sume of Edward Hines Lumber Co., Hood River, Ore., who predicted a rapid increase in these processes of glueing lumber into desired lengths and widths.

According to M. P. Lazara of Greenacres, Inc., Seattle, in his paper, development of small-unit pulp mills within a few years will permit utilization of all debarked wood wastes at small and medium-priced sawmills and ply plants. Upgrading of trees and products and full utilization of all wood can relieve pressure on forests, he said.

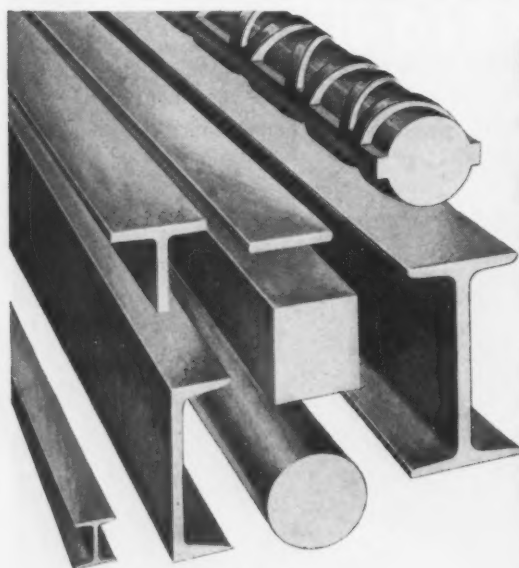
John E. Balint of Controls and Communications Co., Eugene, Ore., discussed savings in particle board manufacture by precision control of wax and resin additives, presently making up 50% of manufacturing cost.

In discussing loss of forest lands to other uses, C. M. Johnson of Weyerhaeuser Co., Tacoma, said more wood will have to be produced on fewer acres to keep up with the country's needs.

Research was the subject of John Aram of Weyerhaeuser and of Dr. Joseph Harrington of Arthur D. Little Inc. Aram said a company should not engage in research until it is ready to commercialize inventions. Harrington spoke about methods of spreading research costs.

Boston Firm in Tucson

TUCSON, ARIZ. — A Western office at 5613 St. has been opened by Electronic Consultants, Inc., of Boston. Harvey Anderson, formerly with Western Electric Co., is in charge of the new office. The Boston firm also plans to open a California office soon.



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Robert Braun Plans New Facility in Los Angeles

LOS ANGELES — Robert H. Braun Co. has started construction of a new \$500,000 plant at 8314 E. Slauson Ave., in the suburb of Pico Rivera. The new 32,000-sq. ft. facility will more than double the company's present space at 5519 Jillson St.

According to the company, the new quarters will be the largest material handling dealer service and sales facility in the West. It will have 10,000-sq. ft. for offices and showrooms, nearly that amount for warehousing and parts, and 12,400 sq. ft. for the firm's repair and maintenance shops for powered material handling equipment.

Completion of the new facility is scheduled for early December. It will serve as general offices and Southern California headquarters for the firm.

Meehleis Steel Expansion To Triple Production

VERNON, CALIF.—A tripled production capacity is expected by Meehleis Steel Co., with the recent completion of a large new steel reinforcing bar storage and fabrication bay.

The 23,000-sq. ft. addition has three bridge cranes to speed handling of some 8,000 tons of bar now in stock. Alligator shears and bar bending tables are among new equipment installed.

R. C. Mahon Plant to Begin Operations in December

TORRANCE, CALIF. — December 1 is the scheduled starting date for operations at the \$3,500,000 plant of R. C. Mahon Co. here. Both a 200,000-sq. ft. manufacturing building and a 10,000-sq. ft. facility for administration and engineering are planned for completion this year.

Machine Parts Firm First In New Industrial Park

PORTLAND — Production Parts Manufacturing Co. will have the first plant in the projected Milwaukie-Minthorn industrial district, a 175-acre tract under development here.

Formerly the Freeman Manufacturing Co., the firm produces machined metal parts from bar or castings for electronics, aircraft and other industries.

Idaho Firm Purchased

POCATELLO, IDA.—Flaherty Mfg. Inc., manufacturer of power brooms, spreaders, brushers and other products, was acquired recently by Koehring Company, Milwaukee, Wis.

... for more details, circle No. 65 on Reader Service Postcard →

CAMPBELL CHAIN OPENS NEW PLANT



Now, Complete Chain Making Facilities For The First Time On The West Coast

Campbell Chain's new plant at Alvarado, California is the most modern chain plant in the nation. The completely integrated plant is equipped to supply Campbell warehouses in Portland, Seattle and Los Angeles, and makes possible same-day or overnight shipment of Campbell Chain's complete line of welded and weldless chain.

The Alvarado plant marks a major development in the expansion of the company, adding to manufacturing facilities at York, Pa. and West Burlington, Iowa, and warehouses across the nation.

CAMPBELL
CHAIN

CAMPBELL CHAIN Company

York, Pa.—W. Burlington, Iowa—Alvarado, Calif.

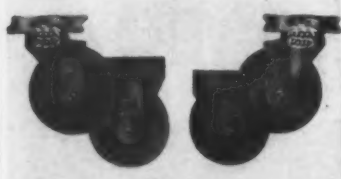
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. . . for more details, circle No. 66

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Sea Water Distillation Unit Scheduled to Start

OXNARD, CALIF.—The West's first general purpose sea water distillation plant is scheduled to start test operations near here next month. Ground was broken recently for the experimental unit erected adjacent to the Mandalay Beach Steam Station of Southern California Edison Co.

The \$250,000 pilot distillation plant will have a capacity of some 100,000 gallons daily. Delivery of equipment, designed and fabricated by Cleaver-Brooks Special Products, Inc., of Waukesha, Wis., began in September.

To be used primarily for research and development, the plant is not expected to produce water at a cost competitive to present sources. However, the conversion of some 100,000 gallons daily is an amount great enough to test methods that may lead to commercial production of potable water at a competitive figure in some areas.

The Edison distillation plant will use a multi-stage flash evaporator—a partitioned, heated chamber in which air pressure is progressively lowered, by condensation of vapor, thus progressively reducing water's boiling point. The vapor is condensed as distilled water.

Triplex Will Build Smelter in Pueblo, Colo.

PUEBLO, COLO.—Triplex Division of Aluminum Industries has revealed plans to construct an all-metal new

\$67,000 smelter building at Memorial Airport.

Triplex asked permission to demolish the old building now used as a smelter and construct the new one at its expense as a safety factor. Several fires have occurred in the present building.

Western Block Holds Open House at Automated Plant

PORTLAND—At an open house held recently Western Block Co. showed its new automatic concrete block plant at 6330 S. E. 101st Ave.

Fully automated, the facility has storage bins of aggregate and cement electronically controlled to deliver automatically a uniform mixture to the batch mixer. A block machine operates with an automatic rack loader and unloader to move block and pallet directly to curing racks.

A specially-designed Hyster lift truck places the rack of blocks in a kiln for drying and sets cured block on the loader and unloader. Blocks are then carried to the storage area where they are cubed into stacks.

Stockton Reports Industrial Expansions

STOCKTON—Industrial expansions reported recently by the Chamber of Commerce here include plans for a \$100,000 Spreckles Sugar Co. warehouse at Manteca; a storage building for the Holly Sugar Co., a warehouse for Best Fertilizer at Lathrop and a warehouse expansion at the Manteca plant of Manteca Canning Co.

MOYNO—the problem solving pump

If your pumping problems are a little different, the entirely different MOYNO may be exactly the pump you need. Its unique helical screw operation makes tough pumping problems easy—enables the MOYNO to handle almost anything that will push through a pipe, from free-flowing liquids to non-pourable abrasive pastes; even handles substances containing solids in suspension. Only one moving part—no pistons, no valves, no high-speed impellers. Provides positive displacement, low turbulence, continuous uniform flow. Capacities to 500 gpm; pressures to 1000 psi. Also available in sanitary types.

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WESTERN INDUSTRY/OCTOBER 1959

Hi-Fi Record Features Rhythms of Industry

LOS ANGELES—A new twist in merchandising of industrial products has made its debut here and it's one for the record.

For that's exactly what it is, a phonograph record entitled "The Voice of Automation," which features industrial sounds and rhythms taken from the automated control system manufactured by Micro-Path Inc., subsidiary of Topp Industries, Inc., Los Angeles.

Source for the reverberating, almost primitive "music" is the Micro-Path unit for controlling machine tools. It



Magnetic tape programmer of machine tool control system is activated by Louis M. Ballard, left, president of Micro Path, Inc., as Tom Johns, vice president, looks on. Johns holds unique hi-fi record.

consists of a stylus device which traces a pattern and directs machine tool control data to a magnetic tape programming system.

The electronic sounds created through this effort have been recorded in a progressive jazz-like arrangement, along with narration on automation and the role it plays in industrial development.

The 33 1/3 rpm record is packaged in an album with descriptive material and photos of the Micro-Path unit.

Micro-Path control units are currently installed at Hughes Aircraft and Ryan Aeronautical Co. Relatively low-cost items for machine tool controls, they come in packages not much larger than a medium-sized hi-fi console.

Denver Equipment Co. Expands Foundry Section

DENVER—Denver Equipment Co. has launched an expansion program in the foundry section of its mining manufacturing plant in Colorado Springs. W. T. Ahlborg, executive president of the firm here has announced.

Fred E. Fogg, formerly production coordinator, has been placed in charge of the foundry expansion.

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and Standard units for complete belt, "live" roller and gravity roller set-ups



Handidrive conveyors are made up of pre-engineered standardized units, such as drives, take-up units, end roller assemblies, intermediate framework, supports and hangers.

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You can assemble and build a system "custom-planned" to suit your individual needs with Handidrive and other Standard units available out of stock. This service enables you to adapt and change the system from time to time to meet varying requirements as they

arise, at exceptionally low cost.

Handidrive conveyors may be individually leveled or inclined. Independent units may be purchased separately to construct power conveyors as desired.

Let Standard show you how to build or convert your own conveyor systems with Handidrive. Write: STANDARD CONVEYOR COMPANY. General Offices: North St. Paul 9, Minn.



Handidrive may be mounted at center or end. Standardized units may be purchased individually for extension to present conveyors, or as complete conveyors.



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Ask Standard how to cut costs with conveyors



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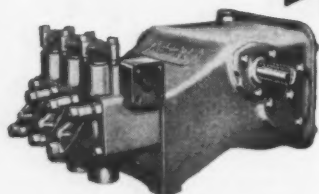


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Morse Drill Point Grinder Shown in Los Angeles



Representatives from the two participating firms included (l. to r.) Brad Aspin, Morse; Nelson E. Heindl, Southern California district manager for Morse; Edward Leis, manager of Ducommun Metals' tool and abrasive division; Fred Duff, vice president and general sales manager of Morse Cutting Tools, and Russ Easton, from the Morse Los Angeles office.

LOS ANGELES — Morse Twist Drill & Machine Co. introduced its new drill point grinder to representatives of Southland industrial firms recently during a demonstration held at Ducommun Metals & Supply Co.

On hand from Morse Twist Drill, Los Angeles office, was Nelson E. Heindl, Southern California district manager, along with other Morse representatives, Brad Aspin, Russ Easton, and Maury Seeley. Fred Duff, vice president and general sales manager, represented the home office, New Bedford, Mass.

Others attending the demonstration were Floyd Walkington, advertising manager, Ducommun Metals, and Edward Leis, manager of tool and abrasive div., Ducommun.

Under power was the compact drill point grinder with adjustable swivel fixture which will grind any conventional point angle from 118° to 150° on any drill 1/16-in. to 1/2-in. diameter up to 6 in. long.

With an extension, drills up to 12 in. can be pointed and a special ma-

chine can be supplied to accommodate drills up to 16 in. long.

The grinder can be equipped with a Heli-Centric point grinding fixture for form point grinding of drills from size # 40 (.098-in.) to 1/2-in. diameter up to 6 in. long for any angle of point 90° to 190°. Addition of a split point fixture will enable an operator to accurately grind split points on all aforementioned sizes, regardless of length.

The split point has come into wide use in the Western aircraft industry and wherever else portable drilling is done to any great extent.

A drill ground with this point is particularly suited to drilling sheet steel and to deep hole drilling in hard steels, titanium and many other new alloys that are hard to work.

This machine is the wet-grinding type and has a manually operated, swing-type dresser. A V-Rest positioner eliminates all need for bushings, jaws, collets and a large tray keeps work-handling to a minimum, prevents messy coolant-splash.

Miniature Rocket Marks Start of Electronics Park

NEWBURY PARK, CALIF. — The setting off of a miniature rocket signaled the start of construction last month on a 100-acre electronics park. First unit of the Packard Bell Electronics Corp. project, a 50,000-sq. ft. facility, is scheduled for completion by the end of the year.

The initial structure will house expanded activities of the firm's Technical Products Division. During the next several years subsequent units will be added to provide ultimately 350,000-sq. ft. of space for the Packard Bell

Computer Corp., a subsidiary, and Technical Industries Corp., an affiliate.

Lytle Moves in Long Beach

LONG BEACH — New quarters here have been occupied by Lytle Novelty Co., formerly known as Lytle Brass & Aluminum Foundry. Formerly located at 1328 W. Broadway, Lytle is now at 1508 W. 15th St.

New Name for Denver Firm

DENVER — Neumann Equipment Co. has changed its name to Applied Handling, Inc. The firm is located at 1863 Wazee St.

Cabinet Firm is First In Pell Industrial Park

SACRAMENTO—Construction on the first plant in what may be this area's largest industrial tract was begun recently by Paine Manufacturing Co., Inc. The Paine firm, now located at 58 Arden Way, will manufacture cabinets for California's building trades.

Five acres will be used in the firm's first development, but the concern has acquired 20 acres for future use. The new facility is in Pell Industrial Park, which comprises 40 acres for initial development, with a total of 175 acres available in the tract, located adjacent to the Western Pacific Railroad right-of-way.

About \$5,000,000 will be spent in developing the first section of the park, with plans for an industrial water system, roads, utilities and railroad spurs.

Industrial Realtors Hear National President in S. F.

SAN FRANCISCO—California's industrial growth and how its potential can be realized was the subject of *Howell Watson*, national president of the Society of Industrial Realtors, when he spoke recently at a luncheon in the St. Francis Hotel.

Sponsored by the Northern California Chapter of the Society and the San Francisco Bay Area Council, the luncheon meeting was attended by some 200 industrial developers and civic leaders.

Watson praised California for setting up the State Economic Development Agency and cited similar agencies in other states and what they have accomplished.

In his study of current industrial expansion in the West, Watson also spoke in Portland and in Seattle.

\$43,500,000 Development at Arizona Copper Project

TUCSON—American Smelting & Refining Co. plans to spend \$43,500,000 to develop a copper mine and mill 15 miles southwest of Tucson, Ariz. The property with its open pit mine will be known as the Mission Project.

The mill will have a capacity of 15,000 tons a day, which would make it second to San Manuel in size within the area. Production is expected to begin in about three years.

Barnes & Delaney Honored by Rust-Oleum

LONG BEACH—Barnes & Delaney, Rust-Oleum distributor, was honored recently at a dinner given by the Rust-

oleum Corp. in the Petroleum Club here.

Paul B. Barnes, senior partner; his associates, J. S. Morrison and P. McCay, and members of the sales and office staff attended the dinner at which J. R. Boren, Rust-Oleum factory representative, presented Barnes with a plaque in recognition of 15 years' service, along with an award for the Barnes & Delaney achievement record, highest west of the Mississippi and second in the country.

New Soule Mill and New Product Shown at Meeting

SAN FRANCISCO—Soule Steel Co. presented two new facets of its operation—a new reinforcing steel rolling mill in Los Angeles County and a new architectural product—at a recent meeting for its district managers. Highlight of the two-day meeting in Los Angeles was a tour of the new mill now in full operation.

The new product—Mosaica—consists of random size and shape glass tesserae set in an organic matrix and laminated to cement asbestos board. It can be used on curved or flat surfaces and is impervious to stains.

Carnation Project Includes New Container Product

PORTLAND—The \$500,000 expansion program undertaken by the Carnation Fresh Milk and Ice Cream Co. here will include introduction of a new plastic milk container.

For making the new product two machines were installed to assemble, fill and seal the plastic containers. Each machine has a capacity of 67 quarts per minute, either in single quarts or in a half-gallon twin pack.

The three-section machine sterilizes the flat carton walls, forms the carton, and attaches the bottom section before filling and sealing.

Sylvania Santa Cruz Plant

SANTA CRUZ—Plans for construction of a 32,000-sq. ft. plant on a 26-acre site have been announced by Sylvania Electric Products. Sylvania has occupied leased facilities here for two years, manufacturing computer components.

\$150,000 Warehouse

RICHMOND, CALIF.—S. H. Kress and Co. will build a \$150,000 warehouse and distribution center at 200 W. Ohio Ave. The 40,000-sq. ft. structure, scheduled for completion in January, will be a supply center for all Kress stores in the Pacific Northwest.

... for more details, circle No. 70 →

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New Plant in Portland Area for Safeway

PORTLAND—A new baking plant under construction by Safeway Stores, Inc., will replace the firm's present bakery on S. E. 2nd Ave., Portland. The 60,000-sq. ft. facility will be adjacent to Safeway's multi-million dollar distribution center at Clackamas.

Completion is scheduled for next spring, with start of operations planned about June 1. The product line will be expanded and will be distributed to the chain's 100 stores in the Portland division.

AiResearch Plans Addition to Los Angeles Facility

LOS ANGELES — AiResearch Industrial Division of The Garrett Corp. will erect a 10,000 sq. ft. receiving and storage building on its property at 9851 Sepulveda Blvd.

The new structure, added to the present production facility adjacent to the machining area, will bring the division's total enclosed area to 60,000 sq. ft.

Airterra Expansion

GLENDALE, CALIF. — An expansion of its prototype shop facilities has been announced by Airterra, couplings manufacturer. According to Paul

Evans, chief engineer, installation of new equipment in the enlarged shop will expedite operations and reduce time spread between planning and production.

Revere Names Ziegler Steel to Handle Copper Sheet

LOS ANGELES — Ziegler Steel Service Corp. has been appointed a copper sheet distributor for Revere Copper and Brass Inc., serving through its centers here, in North Hollywood and Oakland. Ziegler also handles Revere aluminum sheet and coil.

New Tool Supply Firm

LOS ANGELES — Satellite Tool & Supply Co. is a firm recently formed to specialize in cutting tool and machine shop supplies. Located at 1306 S. Lorena St., the new concern is headed by Jack L. Everett, previously with S. C. O. Tool Co. and with Ducommun Metals.

Portland Plant Site

PORTLAND — A seven-acre site at N. Swift and Columbia Blvd. is proposed as the new location of a plant for Fought & Co. Inc., a steel fabricating firm located on Swan Island for the last ten years.

Utah Ceramics Firm Doubles Size of Plant

SALT LAKE CITY, UTAH — Electro-Ceramics, Inc., 2645 South 2nd West, has doubled the size of its plant and expects to gross nearly one million dollars this year in sales of technical ceramics and crystals to industrial and military customers.

Richard D. Hess, president and general manager, has announced that increasing the size of the plant to 35,000 sq. ft. will accommodate an expansion into assembly-line type output of piezo-electro ceramics.

Albuquerque Culvert Firm Reveals Expansion Plans

ALBUQUERQUE — Brown Supply Co., steel culvert manufacturer, will expand facilities in order to manufacture concrete culvert pipe, highway guard rails and bridge rails. Headquarters of the firm are at Lubbock, Texas.

When expansion plans are completed the firm will manufacture pipe from eight to 96 inches in diameter.

Dust-Free Addition

AZUSA, CALIF. — U. S. Relay-Electronics, a division of A-S-R Products Corp. has opened a dust-free addition to its plant here.

AIR-TEK DYNAMICS, Inc. RECOMMENDS MAXOL No. 1 AS THE TOP PERFORMING HYDRAULIC FLUID

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Linde, NASA Officials Attend Ground-Breaking



Following ground-breaking ceremonies for its multi-million dollar liquid hydrogen plant in Torrance, Calif., Linde Co., Division of Union Carbide Corp., was host at a luncheon for civic officials, representatives of the National Aeronautics and Space Administration and others. Pictured above are (l. to r.) Edwin P. Hartman, NASA; L. W. Jordan, Linde vice president; Matthew W. Portz, NASA; Robert Kamm, NASA, and T. F. O'Connell, Pacific Coast manager for Linde. The new facility, scheduled for completion in May, will provide NASA with up to 3,300,000 lb. of liquid hydrogen annually.

American Gypsum Acquires New Mexico Plant Site

ALBUQUERQUE — American Gypsum Co. has purchased part of the land it will use for its \$3,000,000 plant north of here. Academy for Boys sold a 30-acre tract to the firm for about \$120,000.

A company official said American Gypsum has contracted to buy another 30-acre tract from the same organization, to complete the 60-acre site as announced in the original plans to build.

Polymer Corp. Names Two Representatives in Seattle

SEATTLE — The Polymer Corp. of Pennsylvania, manufacturer and distributor of nylon, teflon and other industrial plastics, has named two Seattle firms to represent its products.

Allied Agencies, 4321 Linden Ave., No. F, has been named an official representative of Polymer, while Universal Plastics Co., 1105 Westlake Ave. N., has been appointed an authorized distributor for Polymer products.

Gold Mining Assumes Importance in Idaho

BOISE — Gold mining in central Idaho has assumed new importance with the exposure of rich gold and silver bearing ores by Intermountain Mines, Inc.

The Idaho Mining and Milling Co. said it had moved the first load of dredge equipment to the Florence basin. The company reported that the richest early day discovery made in

Idaho never has had modern mining equipment on it.

Armstrong Rubber Considers Sites for \$5,000,000 Plant

BARSTOW, CALIF. — Two sites in this area are reportedly under consideration for a \$5,000,000 Armstrong Rubber Co. plant. Reports indicated that the plant would cover about 100 acres and employ over 1,000 persons.

Electron Beam Furnace

ALBANY, ORE. — Installation of a second electron beam furnace, made by Stauffer-Temescal Co., is planned by Wah Chang Corp., refiners of tungsten columbium, tantalum and other refractory metals. The furnace will be capable of melting and casting refractory metals in ingots five inches in diameter and 42 in. long.

Appointed by Goodrich

LOS ANGELES — Glass Insulation Co. has been named a distributor for Cell-tite tubing made by B. F. Goodrich Sponge Products, a division of the B. F. Goodrich Co. The Los Angeles firm will cover central and southern California, Arizona, Nevada and New Mexico.

Automation Instruments

PASADENA — Automation Instruments Inc. has acquired Jobbins Electronic of Menlo Park, manufacturer of klystron cells, calibrating and focusing solenoids and other components. The Pasadena firm's products include ultrasonic and non-destructive testing equipment and other products.

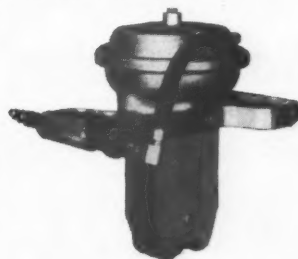
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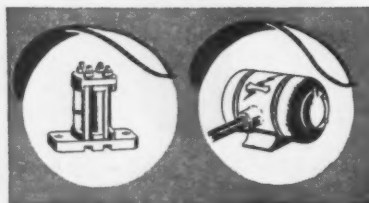
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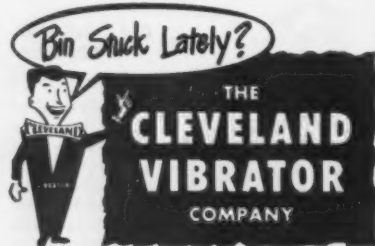
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98

Contract News for the West

PASADENA — Contracts totalling over \$10,500,000 were awarded to Western firms during September by the U. S. Army Ordnance District, Los Angeles, headquartered here. *North American Aviation Rocketdyne Division*, *Sperry Utah Engineering Laboratory* of Salt Lake City and *Douglas Aircraft* were among the companies getting the biggest share.

North American's contracts, classified, totalled more than \$2,700,000; the Sperry Rand unit's order was for about \$2,500,000 for Sergeant missile repair parts and ground equipment, while Douglas' combined orders came to some \$2,650,000, much of it for services and items for the Nike Hercules.

Other Western firms and their Ordnance contracts include *Vinnell Corporation*, contracts for \$569,099 for technical services; *AiResearch Manufacturing Co.*, Los Angeles, \$170,407, for Nike missile repair parts; *Cooper Development Corp.*, \$159,352 for loading and testing of motors; *Aeronutronic*, a \$149,378 contract for infrared study;

Hughes Aircraft Co., a \$147,622 R

& D contract; *Electro-Optical Systems, Inc.*, \$99,832 R & D; *Harvey Aluminum*, a \$98,745 contract for cartridge cases; *Radioplane Div.*, *Northrop Corp.*, a \$74,417 contract for target missile technical services;

The Firestone Tire & Rubber Co., a \$252,000 contract for Corporal missile repair parts and a \$249,797 classified contract; *Vinnell Corp. of California*, contracts for \$224,073 for technical services; *Gilfillan Brothers, Inc.*, contracts for \$179,589; *Harvey Aluminum*, a \$159,000 contract for engineering services; *Eidal Manufacturing Co., Inc.*, \$59,145; *Aerojet-General Corp.*, \$37,500 contract; and *Aeroquip Corp.*, *Marman Div.*, a contract for Nike missile repair parts.

In the Northwest, *Van-Vetter, Inc.*, of Seattle has received a \$2 to \$5,000,000 contract for 1,000-2,000 farm bulk milk cooling tanks to be installed in Louisiana and Mississippi.

Inet Division of Leach Corp., Compton, Calif., reports that orders with potential of over \$2,500,000 were received by the division during August. Equipment for the Titan program and for the Bomarc "B" were included in these orders.

Vard, Inc., subsidiary of Royal Industries, Inc., Los Angeles, obtained a second contract on control rod drive mechanism for the Navy's first atomic-powered aircraft carrier.

In Phoenix, Ariz., *Westinghouse Electric* announces an award by *Goodyear Aircraft*, Litchfield Park, Ariz., of electrical equipment contracts totalling almost \$1,000,000 for powering and guiding Atlas missile erectors, in production by Convair.

Summers Gyroscope's \$525,000 order from *Beech Aircraft* for flight control systems brings to a total of \$2,000,000 the Summers orders relating to the Navy KDB-1 target aircraft.

Servomechanisms, Inc., reports a \$501,270 order for true airspeed computers; *The Rucker Co.* announces a contract to supply hydraulic power systems for Atlas ICBM launching sites, and *Convair* (San Diego) Division of *General Dynamics* discloses news of a \$61,000 contract to develop X-ray standards for determining the strength of steel castings.

Albuquerque Pipe Plant

ALBUQUERQUE — Brown Supply Co., Lubbock, Tex., has announced plans to build a concrete culvert pipe plant here next year. The firm began operation of a corrugated steel culvert plant Aug. 1.

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Tretolite Breaks Ground for \$1,000,000 Facility

BREA, CALIF. — Tretolite Co. broke ground recently for a \$1,000,000 chemical plant on Puente St. and Imperial Highway. Three laboratories, an automated manufacturing area and an administration building will comprise the facility, covering 10 acres of the 23-acre site.

A division of the Petrolite Corp. of California, the Tretolite organization has pioneered in manufacture of chemical demulsifying agents used by the oil industry to separate water from crude oil.

W. P. Fuller Reorganizes Bay Area Operations

SAN FRANCISCO — W. P. Fuller & Co. has unified its Bay Area district to bring the staff and facilities of Oakland and San Francisco districts into a single organization serving the entire area. Warehousing and distribution methods, are being redesigned; the sales outlet system is being enlarged and other phases of the operation are due for reorganization.

M. H. Poppet heads the reorganized Bay Area District.

Three Denver Firms Pool Resources to Get Contracts

DENVER — Three local firms have combined resources to engage in space age development since they were not large or diverse enough to bid successfully for Government contracts.

They are B. K. Sweeney Manufacturing Co., designer and producer of special industrial tools; McPherson Corporation, manufacturing castings in the non-ferrous metal field, and Physics Engineering and Chemistry Corp. of Boulder, a research organization.

John Sweeney, president of the firm bearing his name, will be pool manager. There is no merger or forming of a new corporation involved.

McCarthy Named Rep

PASADENA — McCarthy Associates, Inc., 1055 E. Walnut St. has been named as a West Coast representative for Wayne Kerr Corp., Philadelphia, design and producer of electronic measuring instruments. The McCarthy firm also has branches in Menlo Park and San Diego, Calif., and in Phoenix, Ariz.

Kaiser Distributor

ALBANY, CALIF. — Custom Rolled Corrugated Metals Co., 536 Eastshore

Highway, has been named to distribute Kaiser Aluminum industrial building products in Northern and Central California.

Vinnell Steel Builds Plant in Flagstaff, Colo.

FLAGSTAFF, COLO. — Penstocks, which will regulate the flow of water through Glen Canyon Dam, will be the initial product of the Vinnell Steel fabrication plant now under construction in Flagstaff's industrial park.

The California company, with headquarters in Alhambra, starts production soon on a \$4,000,000 U. S. Reclamation Bureau contract for manufacture and delivery of the penstocks, 16 feet in diameter.

Marquardt Establishes Nuclear Systems Division

VAN NUYS, CALIF. — A nuclear systems division has been established by The Marquardt Corp., for development and manufacture of nuclear propulsion systems and other nuclear products.

The new unit becomes a line organization in the Power Systems Group under Don L. Walter, vice president, with Alan R. Gruber as division director. Initial responsibility of the new division will be work on Pluto, the nuclear ramjet development program.

Hercules to Get Honeywell System at Utah Rocket Plant

BACCHUS, UTAH — The Hercules Powder Co. rocket propellant plant will install a Minneapolis-Honeywell large-scale electronic data acquisition system at its rocket propellant plant here. Hercules is developing a third-stage engine for the Minuteman and will use the system for high-speed processing of rocket engine test information.

The system will monitor and record at "space-age speed" such variables as temperature, pressure, force, strain and vibration, and process this data for analysis.

Magnavox Starts Work On \$1,500,000 Research Lab

TORRANCE, CALIF. — Magnavox Co. held groundbreaking ceremonies recently for a \$1,500,000 research laboratory in the Central Manufacturing District. The lab, which occupies one section of a 10-acre tract, is the first unit of what is scheduled to be a \$5,000,000 electronic center.

Air Conditioning Supply

LOS ANGELES — Air Conditioning Supply Co., 137 Anderson St., has opened a branch office in San Diego at 3752 Rosecranz Blvd. Roy Graser, formerly with Drayer-Hanson, heads the new facility.

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Alcoa Selects Licencees For New Duranodic Finish

LOS ANGELES—Aluminum Co. of America has appointed three Los Angeles firms as licensees for the new Duranodic hard finish used on architectural type 6063 aluminum shapes and extrusions.

Anadite Inc., South Gate; King Anodizing, Burbank, and Baker Metal Finishing, Monterey Park, have been offered the process technique on a non-exclusive, no-royalty basis.

Alcoa's new abrasion-resistant finish

is for use on outdoor metal structures that receive little maintenance and require a finish harder than ordinary anodized surfaces.

S. F. Refrigerator Firm Announces Expansion Plans

SAN FRANCISCO—John Mowatt Refrigerators, has announced it will build a \$200,000, 20,000-sq. ft. plant at Marin & Kansas Streets here. The firm, which manufactures and designs commercial refrigeration equipment and store fixtures, is now located at 1866 Folsom St.

Eberhardt-Denver Buys \$365,000 Facilities

DENVER—The Eberhardt-Denver Co., manufacturer of gears and other precision machine parts, has acquired the maintenance shops at Vasquez Blvd. and Steele St., for \$365,000, to consolidate its operations under one roof.

A wholly-owned subsidiary of the Borg-Warner Corp., the firm has maintained its principal operations at 1408 West Colfax Ave. The new acquisition contains 50,000 sq. ft. of space.

Chemical Firms Explore Green River, Wyo., Area

GREEN RIVER, WYO.—Some 2,000 square miles in the Green River area are being explored by various chemical firms seeking commercial deposits of trona (soda ash).

Diamond Alkali Co. has been active in the area for more than a year, core drilling for trona deposits. Stauffer Chemical Corp. recently was reported prospecting in the area.

And a third firm, an affiliate of Ruby Chemical Co., a California corporation, is reported exploring for trona rock in the western sector of Sweetwater County. A Texas group also has been active in the area immediately south of Green River.

E & M Equipment Appointed Denver Area Rep

DENVER—E & M Equipment Co. has been appointed to represent The Ceilcote Co. of Cleveland in Colorado, Wyoming, Montana, Utah, Arizona and New Mexico. The Denver firm, located at 2415 15th St., will develop markets for Ceilcote's line of industrial corrosion-proofing materials. Ceilcote also produces reinforced plastic ventilating systems and processing equipment.

New Electronics Firm Starts in Bay Area

REDWOOD CITY, CALIF.—A new firm, The Cete: Electronics Co., has been established at 1400 Industrial Way, according to Harrison Johnston, president.

First product of the firm, which makes electronic display equipment, will be precision, high resolution video monitors for use in closed circuit television and broadcasting.

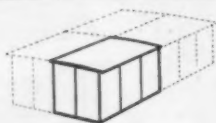
Ampco Names Denver Firm

DENVER—Ampco Metal, Inc., of Milwaukee, Wis., has named Aviation Service Supply Co., Denver, as a stocking distributor for its electrodes, filler rod and spooled wire, gas welding and brazing rods.



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I-T-E Opens High-Voltage Lab at Kelman Division, LA

LOS ANGELES — One of the West's largest high-voltage development laboratories was opened recently at the Kelman Power Circuit Breaker Division of I-T-E Circuit Breaker Co.

Capable of surge testing to voltages as high as 1,500,000 volts, the new facility has the only high-current testing set-up on the West Coast. The lab will be available to regional utilities and industrial firms for advanced testing of a wide range of materials and components.

Denver & Rio Grande to Have Motorola Radio System

DENVER—The Denver & Rio Grande Western Railroad has contracted with Motorola Communications & Electronics, Inc., of Chicago, for construction of a 700-mile, 21-station microwave radio system, including eight terminals and 13 repeater stations.

The system will use equipment recently developed by the A. B. Dick Co., making possible instantaneous transmission of such written material as waybills, train orders, bills of lading.

The railroad plans initially to use 12 channels of single sideband multiplex radio transmission for voice communications.

Gladding, McBean Expands Technical Ceramics Unit

LOS ANGELES — Gladding, McBean & Co. has announced an expansion of its technical ceramics operation which will now be a separate product division of the company. Gladding, McBean has recently received contracts to develop ceramic compositions for rocket nozzles and for materials to withstand high temperatures encountered in rocket launching pads.

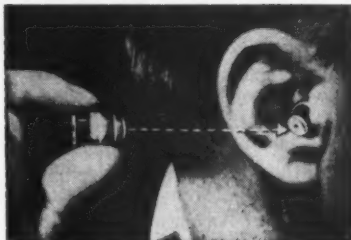
New Address for General Motors Saginaw Operation

BEVERLY HILLS, CALIF.—The Saginaw Steering Gear Div., General Motors Corp., has moved its West Coast zone office, Ball Bearing Screw and Spline Operation, to larger facilities. New address is 9477 Brighton Way, Beverly Hills, where the telephone number is CRestview 4-8309. Kenneth B. Metzger and George A. Widmoyer head the staff.

GE Warehouse in S.F.

SAN FRANCISCO—General Electric's gear motor and transmission components department has established warehousing and gear motor modification facilities at 1098 Harrison St. to provide faster delivery on its products in that line.

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westerners at work

■ *Dr. Phillip S. Meads* heads the list of three Technical Department staff members recently promoted by the California & Hawaiian Sugar Refining Corp. Meads, who has been with the firm since 1936, has been named to the post of technical director. *Richard N. Prince*, assistant chief chemist since 1954, is now in a newly created position—chief chemist, quality control. *Neil Pennington*, most recently senior research chemist, is also in a new position—chief chemist, research.

■ *Frank W. Zwinggi* has been named by the Garrett Supply Co. as service manager of the firm in Phoenix. A veteran of eight years with the Garrett Corp., Zwinggi comes to Phoenix from a sales staff position for Garrett Supply in Los Angeles.

■ *Marvin E. Egeland* has been appointed as president of Bekins Van & Storage Co. of Arizona, climaxing a career that began in 1936 when he was employed by Bekins as a helper in the Oakland office. His first executive assignment came in June 1950 when he was named district manager in San Bernardino. He was transferred to Arizona in 1954.

■ *Charles J. Naulty* has succeeded *Benjamin M. Prestholt* as sales manager for the Pacific Southern division of Link-Belt Co. A Link-Belt employee since 1936, he will serve as



A. E. Kjerf
Consol. Western Steel



J. Kukel
Daystrom, Inc.



D. McNeely
Helipot-Beckman



E. E. Brest
Air Reduction Pacific

district manager in Arizona, Southern California, southern Nevada and part of Mexico, as well as sales manager for the Los Angeles plant at Montebello. Prestholt has returned to the company's Caldwell plant in Chicago to specialize in engineering sales for bulk material handling equipment.

■ *A. E. Kjerf* has been named district manager of the Southwest District of U. S. Steel's Consolidated Western Steel Div., with headquarters at the firm's Phoenix plant. Djerf, who has been project manager at Tullahoma, Tenn., since 1952, succeeds *F. M. Aspey*, who will concentrate on sales activities in the Southwest District.

■ *Robert G. Whitney* has been promoted to be superintendent of slab, plate and strip mills at the Geneva Works of Columbia-Geneva Steel in Provo, Utah. An employee of U. S. Steel since 1947, Whitney replaces *William G. Davis*, who was transferred earlier to the division's Pittsburgh Works as assistant general superintendent.

■ *E. E. (Gene) Brest* has been selected as general superintendent for all Pacific Coast plants of Air Reduction Pacific Co., replacing *Frank Myers*, who died recently. Brest joined Airco in 1948 at the firm's Johnstown, Pa., plant and has served in various capacities with the firm since then. The new superintendent will headquarter at the company office in Berkeley.

■ *Dr. Herbert Bandes* has been chosen to be director of research and development for the Western Division of Arthur D. Little, Inc., in San Francisco. A technical staff associate in the firm's Cambridge, Mass., headquarters since 1958, Bandes was formerly with Sylvania Electric Products, Inc. for 14 years.

■ *David C. McNeely* has been appointed manager of the Helipot Di-

vision of Beckman Instruments, Inc., after serving as acting manager since April, 1958. McNeely joined the Beckman organization as Helipot sales manager in 1953, after similar posts with Philadelphia Gear and Morse Chain Co.

■ *W. G. Hunt*, *Edwin J. Spiegel, Jr.*, and *M. M. Jamieson* were recently appointed assistant vice presidents in the Gaylord Division of Crown Zellerbach Corp. In the Western-Waxide division, *M. A. Barr* was named division general manager, with headquarters in San Leandro, Calif.; *R. L. Appling* was named assistant general manager, and *E. A. Mitchell* appointed assistant vice president for packaging in San Francisco.

■ *Jens Jorgensen* has been named manager of West Coast plywood operations for Georgia-Pacific Corp., and *Milton R. Luton* appointed manager of the Springfield sawmill division, in addition to the Toledo sawmill division.

■ *John M. Macdonald* has been named general manager for both Pres-to-line Corp. of America and of Tamar Electronics, Inc. Formerly contracts manager for Tamar, Macdonald has also been affiliated with Convair Div., General Dynamics Corp.

■ *Dr. Joseph Kukel* has been selected to fill a new post—chief engineer, Instruments and Systems—at Daystrom Pacific Division of Daystrom, Inc., Los Angeles. Before joining Daystrom Pacific in March 1958 as chief engineer for advance development, Dr. Kukel was senior research engineer at Autonetics.

■ *James E. Quinn* of Denver has been named manager of the Western Division of Denver Equipment Co. Directing sales for 11 Western states, Quinn will also head the firm's uranium processing equipment sales division.

■ **Charles Herrin**, an account executive for Motorola Communications & Electronics Inc. since April, 1958, has been named sales manager, two-way radio products, for a 10-state Western area. His headquarters are at 1616 Rollins Road, Burlingame, Calif. Herrin joined the firm six years ago.

■ **Ed Bartz** has been named sales manager of Airline Welding and Engineering, 785 N. Prairie Ave., Hawthorne, Calif., in charge of sales of the firm's weld positioner, roll planishing equipment and other products.

■ **William F. Ruck** has been named manager of engineering services and controls in Dalmo Victor Company's engineering division. Planning and coordination of engineering personnel trips and conferences are under his jurisdiction.

■ **Allan B. Fredhold** has been named general manager of Hadco Engineering Co., a subsidiary of Interstate Engineering Corp. Fredhold was formerly general manager of General Logistics, and before that was with Emsco Mfg. Co.

■ **Dr. J. Robert Sproul** was selected to be acting manager of the research and development department of Rheem Manufacturing Co., with headquarters at the company's South Gate, Calif., plant. Dr. Sproul's long career in research includes association with Armour Research Foundation and General American Transportation Corp.

■ **Daniel W. Ruple** has been appointed vice president and general manager of the Pacific Division of Titeflex, Inc., producer of flexible hose and fittings. Formerly assistant to the president of Titeflex, Ruple will now direct sales, manufacturing, and other phases of the firm's Western operations in Santa Monica, Calif.

■ **C. E. Deardorff** has joined Southwestern Industries, Inc., as chief engineer, to direct engineering activities for all products—gear boxes, actuators, switches and fuel pumps. Deardorff was previously associated with Minnesota Rubber Co., Bendix Aviation and Douglas Aircraft.

■ **E. A. Prosser** has been named sales manager for Pascoe Steel Corp. of Pomona in the greater Los Angeles area. Most recently in Denver with a na-

tional steel building producer, Prosser has some 16 years of building experience. His responsibilities include that of introducing Pascoe Steel's new metal panel with anti-capillary action sidelap.

■ **Charles J. Roberts** has been appointed by Ziegler Steel Service Corp. as sales representative for the state of Washington. Headquartered at 1043 Sixth Ave., Seattle, Roberts was previously with Eagle Metals in Seattle for six years. Before that he represented TubeSales of Los Angeles for five years.

■ **J. W. Mahoney** has been appointed by H. K. Porter Co., Inc., of Pittsburgh, Pa., as vice president for the firm's Western Region. Mahoney's business address is 64,000 Corvette St., Los Angeles 22, where the telephone number is RAYmond 3-2730.

■ **Kay G. Lamber** has been appointed production manager of Radek Industries, Inc. of Cedar City and St. George, Utah. He will supervise and train employees in the St. George plant and assist **J. T. Jacobs**, president, in development and design of new products for the company, which makes communications equipment.

■ **William C. Howe, Jr.**, chief engineer and secretary of Allen Steel Co., of Salt Lake City, has been named manager of the newly created administrative department. He is succeeded in his chief engineer position by **Robert W. Traxler**.

■ **George Halgedahl**, Salt Lake district manager for Soule Steel Co., has been transferred to the company's San Diego district office. **Thomas Regan**, formerly resident salesman for the company at Sacramento, is being transferred to the Salt Lake post, while **H. Scott Anderson**, formerly district manager at San Diego, is now product manager for the commodity items at San Francisco.

■ **Edwin (Ted) Drewry**, formerly of Preston, Ontario, has been appointed assistant to the plant manager of the Reynolds Metals Co. extrusion plant in Phoenix. According to **Russell V. Bobb**, manager, Drewry also will function temporarily as manufacturing manager for the plant.

■ **Bruce D. Walker** and **Charles C. Barham** have been selected by Oakite

Products, Inc., as technical service representatives in Western areas. Walker, who has been with Oakite in Topeka, Kan., the last three years, will serve the food industries in Denver, joining **Frank Darden**, Oakite's metal specialist. Barham will serve food industries in San Francisco for Oakite, manufacturer of specialized chemical compounds.

■ **Rhule L. Bell** has been selected for the post of superintendent at the Westinghouse manufacturing and repair division plant in Compton, Calif. Previously engineering supervisor there, Bell replaces **J. E. D. Morris**, named manager of the new Westinghouse facilities in Phoenix. **A. R. True** succeeds Bell as engineering supervisor in Compton. Another Westinghouse appointment is that of **W. Edward Hurford** as Arizona manager of the Westinghouse Electric Supply Co. (WESCO), with headquarters at 1110 N. 21st Ave., Phoenix.

■ **John E. Grimshaw** has joined Union Die Casting Co., Whittier, Calif., as plant superintendent, supervising production in three divisions—custom die casting, consumer products, and plumbing and hardware. Grimshaw was formerly with Phillips Mfg. Co., Zenith Die Casting, Inc., and Duro Fittings Co.

■ **John G. McLain** has been transferred from the East by Blaw-Knox Co. to be Western manager of foundry and mill machinery sales, headquartered at the firm's West Coast office in Millbrae, Calif. **Gilbert C. Berquist**, roll sales engineer, has also been assigned to the West Coast.

■ **Robert E. Halladay**, Utah Manufacturers' Association, has been appointed chairman of the manufacturers committee to serve the Salt Lake City Chamber of Commerce during 1959-1960.

■ **J. W. Burgess**, manager of construction here for Uranium Reduction Co., has been named chief engineering officer for American Zinc-Lead and Smelting Co. and subsidiaries at St. Louis, Mo.

■ **John R. Gorey** has been promoted by Lindberg Engineering Co. of Chicago as administrative assistant to **Karl Lang**, general manager, Western Division Los Angeles plant.

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